Reports to Congress:

Medicare Physician Payment

Volume and Intensity of Physician Services

Relative Value Scales for Physician Services

Implementation of a National Fee Schedule

PUBS
R
728
.5
R47
1989
[Sept.]

U.S. Department of Health and Human Services
Health Care Financing Administration

Reports to Congress:

Medicare Physician Payment

Volume and Intensity of Physician Services

Relative Value Scales for Physician Services

Implementation of a National Fee Schedule

U. S. Department of Health and Human Services
Health Care Financing Administration

September 1989

Volume and Intensity of Physician Services

U. S. Department of Health and Human Services
Health Care Financing Administration
September 1989

GROWTH IN THE VOLUME AND INTENSITY OF PHYSICIAN SERVICES:

ISSUES AND OPTIONS

LOUIS W. SULLIVAN, M.D.

SECRETARY
DEPARTMENT OF HEALTH AND HUMAN SERVICES

1989

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	ES-1
CHAPTER 1. INTRODUCTION	1-1
Statutory Requirement	1-1
VI of Physicians' Services: The Problem	1-1
Factors Affecting Expenditures for Physicians' Services	1-2
CHAPTER 2. RESEARCH IN SUPPORT OF THIS REPORT	2-1
Recent National Trends	2-3
CHER Findings	2-4
Mandex Findings	2-5
Urban Institute Findings	2-6
Discussion	2-7
CHAPTER 3. EXPERIENCE WITH VOLUME CONTROL STRATEGIES	3-1
CHAPTER 4. OPTIONS FOR CONTROLLING THE IMPACT OF VI GROWTH ON MEDICARE OUTLAYS	4-1
Influencing Patient Behavior	4-6
Influencing Physician Behavior	4-7
CHAPTER 5. IMPACT OF RBRVS ON VI	5-1

APPENDICES

A. How Medicare Determines Physician Payments

B. Medicare Program Physician Payment Controls on Volume and Intensity.

C. Models of Physician Behavior

Description of Tables

Table 1 Components of Increases in Total Recognized Charges per Enrollee for Physician Services: Historical

Table 2 Medicare Amount of Allowed Charges and Percent Distribution of Allowed Charges for Physician Services by Type and Place of Service: CYs 1982 to 1987

Table 3 Assignment Rate Based on Charges, BY 1977-1988

Table 4 Trends in Physicians' Expenditures per Inpatient Admission, 1982-1987

Table 5 Medicare Average Allowed Charge per Office Visit and Percent Distribution of Visits by Type of Visit for New and Established Patients: CYs 1985 to 1987

Table 6 Medicare Average Allowed Charge per Inpatient Hospital Visit and Percent Distribution of Visits by Initial Care and Subsequent Care Visits: CYs 1985 to 1987

Table 7 Total Medicare Physician Expenditures per Beneficiary by State, 1983-1986

Table 8 Sources of Increase in per Beneficiary Spending for Physicians' Services, 1983-86

Table 9 Total Medicare Physician Expenditures per Beneficiary by Location of Service, 1983-1986

Table 10 Sources of Increase in Medicare Spending per Beneficiary for Surgery, 1983-1986

Table 11 Shifts in Distribution of Medicare Office and Hospital Visit Codes, 1983-1986

Table 12 Allowed Charges for Physician Services, Five Selected States, 1983 to 1985

Table 13 Decomposition of Increases in Allowed Charges by Type of Service, Five Selected States, 1983-1985

Table 14 Percent Changes in Medicare Expenditures per Enrollee All U.S., 1983-1985

Table 15 Expenditures on Physicians' Services, Canada and United States

Table 16 Illustration of Budget Neutral medicare Payment Redistributions, Assuming Selected Physician Behavioral Changes, Harvard RB-RVS Payments vs. Current Allowed Charges, Preliminary Findings

ACKNOWLEDGEMENTS

Final stages of the preparation of this report were organized and supervised by C. Ross Anthony, Ph.D., Associate Administrator for Program Development, Health Care Financing Administration. The report was written under the direction of Joseph R. Antos, Ph.D., Director, and George J. Schieber, Ph.D., Acting Director of the Office of Research and Demonstrations (ORD). Direct management of the preparation of the report was performed by Stephen F. Jencks, M.D., Acting Director of the Office of Research (OR), William Sobaski, Director, Division of Reimbursement and Economic Studies, OR, ORD, and Sherry Terrell, Ph.D., Chief, Noninstitutional Studies Branch, OR, ORD.

Terrence Kay (HCFA) drafted much of the report and served as the report manager. Various sections of the report were drafted by Stephen Jencks, Sherry Terrell, and Art Suekoff (HCFA). Extensive review and comments were provided by Ira Burney (HCFA), Robert Kazdin (HCFA), John Langenbrunner (HCFA), Thomas Kickham (HCFA), Bernard Patashnik (HCFA), Jesse Levy (HCFA), George Greenberg (Office of the Assistant Secretary for Planning and Evaluation, HHS), Carl Taylor (Office of the Assistant Secretary for Management and Budget, HHS), and Steve Bandeian (OMB).

Principal investigators for the research and analyses conducted in support of this report were Charles Fisher (HCFA), Janet Mitchell (Center for Health Economics Research), Howard West and Peter McMenamin (Mandex, Inc.), Mark Pauly (University of Pennsylvania), Roger Feldman (University of Minnesota), and John Holahan (Urban Institute).

EXECUTIVE SUMMARY

This report primarily focuses on Part B physicians' services which account for about 60 percent of Part B services. To support the production of this report, the Department analyzed national trends in total allowed charges for physician services, consulted with nationally recognized health research experts, and commissioned four extramural research studies. The report provides background information on volume and intensity (VI) issues, including a discussion of factors contributing to physician expenditure growth (Chapter 1), presents trends in VI growth and reviews the research commissioned by the Department to analyze VI related issues (Chapter 2), reviews Medicare's and private payers' experiences with VI control methods (Chapter 3), discusses options for protecting beneficiaries and the Medicare program from the impact of VI (Chapter 4), and concludes with a discussion of possible impacts of a resource-based Relative Value Scale (RBRVS) on VI (Chapter 5).

Background. In FY 1990, Medicare expenditures for physicians' services will exceed $25 billion. Expenditures for physicians' services are the second largest component (after hospitals) of Medicare spending and the third largest Federal domestic program. Over the past 10 years (1978-1987), Medicare physicians' expenditures have increased at annual compound rates of 16 percent. Over the next 10 years, even without any program expansions, Medicare spending for physicians' services will likely triple. About the year 2005, total Medicare spending is expected to exceed spending on Social Security, in part, because of the rapid increase in physician spending. This will make Medicare the country's largest entitlement program.

About 15 percent of the increase in physician spending during the past 10 years was due to an increase in the number of beneficiaries who have increased at about 2 percent a year. About 40 percent was due to increases in payments per service, which are largely the result of adjustments for inflation. About 45 percent of the growth resulted from "residual" VI-related factors, including growth in the number of services (including those from new services and technology), and shifts from less expensive to more expensive services (greater intensity). (See Table 1.)

Forces driving the growth in VI. VI includes all factors contributing to physician expenditure increases other than changes in payments for individual services and in the covered population. The most important aspect of Medicare's physician payment system is that it gives physicians and beneficiaries little or no incentive to control VI of services.

Ideally, a full explanation of factors responsible for Part B growth would be developed from a full clinical and economic model of physician and patient behavior that incorporates all clinical and economic incentives inherent in the payment practices of all third party payers. Considering the many variables determining the physician services market, it is not realistic to expect that a model can be developed that can attribute recent changes in physician expenditures to specific factors. Problems in developing a full model are compounded by inadequate data and data measurement problems, multiple simultaneous changes in the Medicare

program, technological advances, and the interactive effects of Medicare and other third party payers.

Nevertheless, a number of major VI-related factors can be identified that either affect physician willingness to supply services or affect beneficiary demand for these services. Among the factors driving VI growth are: (1) payment incentives, (2) technology, (3) physician willingness to provide services, and (4) factors related to beneficiary demand for services.

Payment mechanisms have contributed to VI growth because:

- Medicare still pays for most services through traditional fee-for-service arrangements in which a separate payment is made for each service rendered by the physician. Clearly this arrangement provides few incentives for efficiency and may actually encourage the overprovision of services.

- Physicians have considerable discretion as to how they define and report services they provide. They might assign more remunerative codes to services for which they formerly assigned less remunerative codes ("upcoding") or they might bill separately for services for which they formerly billed under a single code ("unbundling").

- The current payment system contains no incentives to encourage physicians to reduce charges for procedures to reflect technological improvements, increased experience, and other factors that might lower production costs.

- Medicare often pays more to specialists than nonspecialists for similar services, and specialists represent a growing fraction of Medicare providers.

Technology has contributed to VI growth because:

- New services and treatment methods have emerged. Many of the procedures that accounted for recent growth in physician expenditures were either rarely performed or unknown when the Medicare program was legislated.

- Despite research on the effectiveness of services for certain specified conditions, there is little research base for determining whether procedures are effective in many of the circumstances in which they are used.

Physicians' willingness to provide services has contributed to VI growth because:

- There are more physicians per 100,000 of population and more of those physicians are trained in the specialties that provide the costly high technology services.

-- The technology to provide services that appear useful to patients has expanded.

-- The risk of malpractice suits may encourage physicians to provide services for "defensive" reasons.

Patients may be more willing to receive services because:

-- Services have become available for conditions that were untreatable 20 years ago (e.g., coronary artery bypass grafts, total joint replacement).

-- The inconvenience and risk of many services has dropped dramatically (e.g., ambulatory surgery, decreased operative times).

-- Medigap coverage has, along with Medicaid coverage of many Medicare beneficiaries, eliminated some or all coinsurance costs for about 80 percent of beneficiaries; the growth in acceptance of assignment has reduced the cost of balance billing. As a result, many beneficiaries have no or minimal out-of-pocket cost for any covered medical service.

Research in support of this report. Considering all the important factors affecting VI that have occurred almost simultaneously, it is difficult to separate and measure their relative influence. The Department made an extensive effort to gain more information about VI issues and to respond to the congressional mandate. National trends in total allowed charges for physicians' services were examined by Health Care Financing Administration (HCFA) staff using national Part B data files. The Department consulted with nationally recognized health research experts and commissioned four extramural research studies to provide data on geographic variation in expenditure growth and to perform a wide variety of VI-related analyses. Some of the highlights from these analyses are summarized below.

Findings. During the 5-year time period from 1982 through 1987, total allowed charges[1] for physicians' services grew from $15.1 billion to $26.6 billion, an $11.5 billion increase (76 percent). By type of service, the increases in total allowed charges between 1982 and 1987 were as follows:

- Surgical related services, including surgery, assistant-at-surgery and anesthesia, increased by 85 percent and accounted for 42 percent of the overall increase in expenditures for physicians' services.

- Medical care, primarily physicians' visits, increased by 52 percent and accounted for an additional 27 percent of the increase.

---

[1]Allowed charges include Part B trust fund expenditures, beneficiary deductibles, and coinsurance.

- Consultations increased by 127 percent and accounted for 6 percent of the overall growth.

- Diagnostic radiology services increased by 133 percent and accounted for 12 percent of total growth. Therapeutic radiology services increased by 109 percent and accounted for 2 percent of overall growth.

- Clinical lab services increased by 84 percent, accounting for 11 percent of overall growth.

Allowed charges for physicians' services in inpatient settings increased by 27 percent between 1982 and 1987, with the largest increase occurring between 1986 and 1987 (an 11 percent increase). The increase in allowed charges for physicians' services in inpatient settings is even more striking because it occurred during a period that Medicare hospital admissions and days decreased. Notably, Medicare physician allowed charges per inpatient admission increased by 10.6 percent between 1986 and 1987.

Because Medicare allowed charges for physicians' services increased by larger amounts in other settings, the share of spending on an inpatient basis went from 62 percent in 1982 to 45 percent in 1987. In contrast, the outpatient department went from 5 percent to 16 percent of total allowed charges for physicians' services during this period. While this shift occurred because expenditures for physicians' services in outpatient settings increased more than five-fold, the very rapid year-to-year changes occurred before 1986.

Three of the studies undertaken with funding by the Department provide data for selected geographic areas. The Center for Health Economics Research (CHER, 1988) reported that during the period 1983-1986 for the four States it studied (Alabama, Connecticut, Washington, and Wisconsin), expenditure increases per beneficiary varied from 13.6 percent in Wisconsin to 46.4 percent in Washington State.

Mandex, Inc., (1988) analyzed spending for physicians' services in Indiana, Washington, South Carolina, South Dakota, and North Dakota from 1983 to 1985. Mandex found that the aggregate expenditure growth ranged from an increase of 10.5 percent in North Dakota to a high of 27.3 percent in South Carolina over the 2-year period.

The Urban Institute (1988) examined expenditure growth between 1983 and 1985 by region using a 5 percent national sample of beneficiary claims from two different data sources. The Urban Institute reported that, in general, the New England and Middle Atlantic States, as well as the Mountain region, had the fastest growth rate in Medicare expenditures (19.1 percent, 18.8 percent, 21 percent, respectively) whereas the East North Central (11.5 percent) and Pacific (10.2 percent) regions had the slowest growth rates for the 2-year period.

Additional descriptive data from these studies provide important clues as to types and places of service that have experienced the most growth and factors that drive expenditure growth for individual procedures. Despite differences in methodology and data sources, these studies show that there has been dramatic growth in ambulatory surgery, especially for cataract surgery and procedures such as colonoscopies. This suggests that technological developments (e.g., flexible scopes and the extracapsular technique for cataract surgery) are an important factor affecting growth. These studies also indicate that there has been some upcoding of visits which appears to vary in amount across States.

Experience with VI control strategies. The report also discusses the experiences of Medicare, Medicaid, private insurers, and Canada with volume control strategies for physician services. The Medicare program and the carriers conduct medical review, on either a prepayment or a postpayment basis, to assure that payment will only be made for items and services that are reasonable and necessary. HCFA currently mandates 13 prepayment screens that must be utilized by all carriers. During FY 1989, carriers spent about $56 million to conduct prepayment review on about 57 million claims. According to data from the Quarterly Carrier Medical Review Report, prepayment review provides approximately $10 in program cost savings for each administrative dollar spent in support of the program.

Postpayment review is conducted by the carriers at the individual provider level. Carriers select individual providers (about 20,000 in FY 1988) for intensified review through a variety of techniques such as reviewing practice patterns for high volume procedures.

During FY 1988, HCFA spent about $14 million on postpayment review. Using current techniques that measure only actual savings, carrier quarterly reports indicate that postpayment review saves $1-2 in program dollars for each administrative dollar expended. Postpayment review can provide significant but unmeasured additional savings through avoided costs, such as through a sentinel and educational effect in the physician community that helps reduce inappropriate billings.

Many State Medicaid programs have adopted managed care initiatives as authorized by the Omnibus Budget Reconciliation Act (OBRA) of 1981. Managed care is perceived by these States as an alternative to the control of utilization and expenditures through limitations on eligibility or payment.

A review of private payer VI initiatives was also conducted. Results from a survey of 111 commercial health insurance carriers that are members of the Health Insurance Association of America, representing 132 different health insurance plans, indicate that these private carriers continue to pay primarily for services using traditional fee-for-service methods; 111 of the 120 plans responding to the survey indicated that they pay using usual and customary charges (Pauly et al., 1988).

In addition, the Canadian experience with regard to volume and expenditure control was reviewed. The absolute level of Canadian health care expenditures per capita is well under United States per capita

expenditures. Nevertheless, the Canadian experience in controlling expenditures must be discussed in the context of its health care system. Since 1971 every Canadian province has paid for physician services under a comprehensive and universal health insurance program. There is only one payer for each province and fee levels for physicians' services are negotiated between provincial government health representatives and professional associations. Although each province has a unique payment system, the medical associations generally determine the relative fee levels for each service and negotiate annual percentage increases in payments with the provincial governments. In effect, the approach is to control total expenditures through adjusting fee levels rather than attempt to directly manage or control volume.

Options for controlling the impact of VI Growth on Medicare outlays. This report examines four general types of options for controlling the impact of VI growth on Medicare outlays:

A. Aggregating payments.

1. Capitation
2. Geographic capitation
3. Physician capitation
4. Preferred Physician Organizations (PPOs) and other managed care arrangements
5. Bundling of physician and facility payments/physician diagnosis related groups (DRGs)
6. Other bundling options
7. Improved coding/definition of services

B. Incentives targeted to beneficiaries

1. Beneficiary cost sharing
2. Second surgical opinions

C. Influencing physician decisionmaking

1. Clinical guidelines and effectiveness research
2. Utilization review and coverage policy
3. Conflict of interest rules
4. Adjusting payments for services

D. Growth targets

In evaluating these options, we consider their ability to control the effect of VI growth on outlays, their administrative costs and feasibility, and their likely effect on the appropriateness of medical care, on beneficiary liability and access to care, and on physician and beneficiary behavior.

Capitation. Under a capitated approach, Medicare makes a single payment in advance for all covered services for each beneficiary. In contrast to fee-for-service based payment systems, capitated systems provide incentives for providers to simultaneously control both price and VI and create a mechanism to control Medicare outlays. Capitated systems have a

number of related advantages; a reduced level of Federal regulation can be achieved, for example, because the capitated providers can be assigned responsibility for payment details.

Capitated care is successful and widespread in the United States, and the number of Medicare beneficiaries enrolled in capitated systems has doubled in the last 5 years. Nevertheless, only 3 percent of Medicare beneficiaries are enrolled in capitated systems and, even with continued strong growth, other strategies are necessary for the short and medium term.

Geographic capitation. A geographic capitation system would put an organization, such as an insurer at risk for physicians' services provided to all Medicare beneficiaries living in a geographic area, such as a State or carrier service area. In effect, the Federal Government would buy the Medicare benefit package on behalf of all Medicare beneficiaries in an area at a fixed price from a single underwriting entity. Competition could be encouraged by permitting beneficiaries to enroll in other capitated plans in the same area. Under this approach, Medicare might be able to take advantage of the benefits of dealing with capitated entities without all beneficiaries enrolling in health maintenance organizations or other capitated plans.

Physician capitation. Another alternative to making capitated payments for all Medicare services would be to make a capitated payment to physician groups that would cover some or all Part B services. As with total capitation, physician capitation shifts the risk of increasing VI from the Government to the physicians, thereby changing incentives.

Services covered could include all physician services or a package of selected services, such as primary care along with outpatient laboratory and x-rays. The individual primary care physician or group practice could receive a capitated payment for the primary care of each enrolled beneficiary. An advantage of physician capitation is that the total amount of risk is less than when all services are capitated because the relatively more expensive hospital costs are excluded from the capitated payment.

PPOs and other managed care arrangements. A PPO is a network of providers who agree to provide health care services under certain constraints (such as lower fees or increased utilization review) in exchange for expected advantages, such as prompt payment and an increased volume of patients. The savings from PPOs are generally achieved through efforts such as utilization review, hospital precertification, concurrent review of inpatient days, discounted fees, and directing patients to preferred providers.

PPOs, prepaid plans, and other insurance programs often employ case management techniques as a method of controlling expenditures for especially expensive patients through directly managing use of services, offering special benefits, and directing patients to particular sources of care.

HCFA is developing a PPO demonstration involving five sites to test the feasibility of offering Medicare beneficiaries the option of receiving managed health care services on a fee-for-service basis.

Bundling physician and facility payments/physician DRGs. At present, Medicare makes a separate payment for each physicians' service and also makes a payment to the facility when services are provided in facilities such as hospitals and ambulatory surgical centers (ASC). VI of some physicians' services might be controlled by making a single payment for all associated physician charges. This payment could be combined with the payment to the facility, or could be made separately to a physician group or the medical staff. In general, bundled payments contain incentives for providers to reduce the use of marginal procedures and reduce the opportunity for discretionary billing of services. There are many possibilities for developing prospective, per case payments for physician services, such as including selected services performed in inpatient (e.g., physician DRGs) or outpatient hospitals and ASCs. Medicare has begun implementation of a demonstration in which a single payment will be made for all services associated with coronary artery bypass surgery.

Other bundling options. There are other less extensive bundling approaches that might help Medicare to achieve cost control of some services by redefining the payment unit from a narrow procedure to a more comprehensive packaging of services. An example might be to develop office visit packages in which the visit charge would include all associated ancillary services (e.g., lab tests, x-rays, electrocardiograms). Another bundling approach would be to include the office visit charge in the charge for some minor surgical and diagnostic procedures such as skin lesion removals. In these instances, separate bills for visits would not be allowed unless it were clear that other significant services were provided during the visit.

Improved coding/definition of services. More precise coding rules could reduce both upcoding and unbundling for some services. One area in which upcoding is of special concern is for services such as office visits, hospital visits, and consultations (Office of Inspector General report, 1989). Possible solutions could be to collapse the number of codes used for payment purposes or to incorporate time spent by the physician in providing the service.

Influencing patient behavior.

Beneficiary cost sharing. Currently, Medicare beneficiaries are responsible for the first $75 of covered services before Medicare begins to pay for service. (This "deductible" amount was set at $50 in 1966 and was raised to $60 in 1973 and $75 in 1982.) After the deductible is met, the beneficiary is responsible for 20 percent of the allowed charge per service and, for unassigned claims, any amount by which the actual charge, as limited by the maximum allowable actual charge, exceeds the allowed charge. The goal of cost sharing is to give beneficiaries an interest in selecting less costly providers and in questioning the necessity of services by making them more sensitive to cost.

Second surgical opinion programs (SSOP). Surgery accounted for about 41 percent of the total increase in physician spending over a recent 5-year period (1982-1987). In an attempt to reduce unnecessary risk to patients and control surgical spending, Medicare and many private payers and Medicaid programs use SSOPs to ensure that the proposed surgery is medically necessary. Medicare encourages second surgical opinions by paying for them and by maintaining hotlines through which beneficiaries can obtain names of physicians qualified to provide second or even third opinions. In addition, as required by the Consolidated Omnibus Budget Reconciliation Act of 1985 (P.L. 99-272), Peer Review Organizations (PROs) subject at least 10 surgical procedures to pre-admission and/or pre-procedure review and may require a second opinion when appropriate.

Influencing physician behavior.

Clinical guidelines and effectiveness research. Clinical guidelines and effectiveness research seek to provide physicians and others with information to assist in determining the type of care that should be rendered to a particular patient. Effectiveness research may have implications regarding what services will be covered even though the primary goal is to influence decisionmaking by providing better data. The argument for this strategy is the shortage of consensus and hard data as to when procedures should be done. It should be noted that neither guidelines based on consensus nor effectiveness research will necessarily reduce VI of services; effectiveness research could lead to increased use of some services.

Utilization review and coverage policy. Utilization review depends on organizations such as Medicare carriers, PROs, insurers, and medical societies to change physician behavior through education, withholding payment, or other sanctions. Utilization review may operate three ways: (1) prospectively, before service is rendered, through methods such as pre-admission screening and second surgical opinions, (2) concurrently, through monitoring care during treatment, and (3) retrospectively, through reviews of claims and medical records, either before or after payment is made. It might be possible to increase utilization review activities for physicians with large increases in Medicare VI, or in geographic areas where the number of procedures per beneficiary is largest. Coverage policy is closely related to utilization review, although the administrative structures are different. Coverage policy is the method by which Medicare defines the services for which it will pay and the circumstances in which it will pay.

Conflict of interest rules. There is a potential conflict of interest any time a physician's decision regarding providing or ordering a service may increase his/her profit. In a fee-for-service system, some such conflicts are inevitable, but certain situations create even more powerful conflicts. For example, conflict of interest concerns are raised by the possibility that physicians might overprescribe drugs when they dispense them directly to patients. Conflict of interest concerns are also raised when physicians own imaging facilities or laboratories to which they refer patients. Subsequent growth in VI of those services raises inevitable suspicions in the minds of the public and Federal officials. There is little direct evidence about actual inducements resulting from such

arrangements, and consequently, as to the savings that forbidding such referrals might achieve. In areas where the physicians owned the only facilities, conflict of interest rules might even create barriers to care.

Adjusting payments for services. Some economists believe that inequitable payment rates might create economic incentives for physicians to inappropriately perform some services (Hsiao et al., 1988). This suggests that it might be possible to moderate volume growth of some services through selected payment adjustments based, for example, on inherent reasonableness or on recent research on relative values for physician services. It is unlikely, however, that modifying relative payment amounts could result in a significant slowing of volume growth. Basic fee-for-service incentives to increase volume would remain in place. Furthermore, physicians might respond to decreased payments by attempting to recoup lost income in unpredictable ways (e.g., by increasing volume of the service receiving the reduced payment or by inappropriately performing other, more profitable services).

Growth targets. Growth targets can be set by determining in advance an acceptable level of aggregate Medicare expenditures for a given geographic area and time period. A widely discussed model would vary the annual physician fee update based on a comparison between actual and targeted program outlays in a preceding period. Growth targets can be set at the national level or at some other geographic level. Medicare could set a growth target for the year for a group of services, all physician services, all Part B services, or even all Part A and Part B services. This method would not control VI directly, but could shield Medicare trust funds from the impact of VI growth since costs to Medicare would be controlled directly through the payment per service.

Although growth targets raise policy issues that are discussed in the report, they, in fact, do not reflect a major change from recent policy experience whereby the Medicare annual payment update has been reduced to partially offset large expenditure increases. A growth target has one potential advantage compared with this de facto policy. Growth targets are intended to create a collective incentive to encourage the medical community to work cooperatively with the Medicare program to identify and correct problems related to unnecessary care. A more direct linkage between the collective incentives of the growth target and the practice patterns of individual physicians might be established by an "opt-out" option for qualified physician groups. Under this policy, a physician group (such as a PPO or a hospital medical staff) could opt-out of the general growth target. Such a group would then receive a fee update based on the cost performance of the group in relation to the target rate. This would provide incentives for physician groups to be organized to provide care in a cost-effective manner.

A variety of design questions would need to be addressed to develop a growth target policy. These include: (1) the range of services to be included in the target, (2) whether the target should apply at a national, statewide, or substate basis, (3) what factors should be used to establish and update the target, (4) the nature of the fee adjustment that would result if the target is exceeded, (5) whether there should be a withhold from current year payments or an adjustment in fee levels in the

subsequent year after the end of the target period, and (6) whether there should be an opt-out for qualified physician groups, and if so, what the terms of the policy should be.

Impact of RBRVS on VI. For years economists have inconclusively debated whether growth in VI was driven predominantly by physicians inducing patients to accept services or by patient demand. This debate has usually focused around issues such as whether physicians seek to attain a target income and whether physicians can induce demand for their services. This debate has important implications for the implementation of an RBRVS for payment purpose such as the one being developed by Hsiao (1988) and other researchers at Harvard University under a cooperative agreement with HCFA.

It is clear from preliminary analyses that most RBRVS-based payment schemes implemented in a budget neutral fashion would substantially alter payments for a significant number of services, generally increasing payments for visits and decreasing payments for many surgical procedures. Under many scenarios, these payment changes could be substantially greater than any previous payment change implemented by the Medicare program. Thus, there is no precedent from which to predict confidently how physicians can or will respond to payments based on an RBRVS. Response is likely to depend not only on physicians' ability to recoup losses by inducing volume, but also on many other factors such as ability to substitute other services, the amount of discretion the physician has as to billing for services, the degree of physician dependence on income from Medicare, ability to recapture Medicare losses from non-Medicare patients, and on whether other payers also adopt payment schedules based on RBRVS.

Projections of physician response to an RBRVS are uncertain. Nevertheless, this response is important for two reasons: (1) Budget impacts would need to be assessed if an RBRVS were adopted as a basis for payment. Analysis of budget impacts would require a prediction of how great a volume of services will be provided, and this volume depends, in turn, on how much specialists increase their volume of services to recoup reduced payments. (2) If there is a substantial induction of demand by physicians in response to decreased payments, Medicare's problems with VI growth might become appreciably worse.

Because of this uncertainty as to behaviorial response, the most prudent approach to implementing an RBRVS might be to adopt an expenditure growth target that would enable Medicare to take care of any behaviorial response as it took place. A growth target would also take account of features of implementation that could not be made precisely budget neutral, such as changes in global fee definitions and changes in geographic areas used for payment determinations.

CHAPTER 1

INTRODUCTION

STATUTORY REQUIREMENT

Section 4056(c)(2) of Public Law 100-203, the Omnibus Budget Reconciliation Act (OBRA) of 1987, requires the Secretary of Health and Human Services (HHS) to study the following issues related to volume and intensity (VI) of physicians' services:

(A) Historical trends,

(B) Geographic variations,

(C) An analysis of the effectiveness of methods currently used to insure that payments are made only for services that are medically necessary,

(D) Alternative methods to control volume of service, and

(E) The impact of the implementation of a relative value scale on VI of physicians' services.

Physician services defined. This report primarily focuses on Part B physicians' services. These services include those Medicare Part B services that contribute directly to the diagnosis or treatment of an individual patient, are personally furnished by a physician, and ordinarily require performance by a physician. Some additional services (e.g., some clinical laboratory services) are included in some of the tables in this report in order to illustrate trends. Services included in this report account for about 60 percent of Part B services.[1] This report addresses nonphysician Part B services only to the extent that physician services directly result in certain payments such as outpatient facility fees.

VI OF PHYSICIANS' SERVICES: THE PROBLEM

In FY 1990, expenditures for physician services under the Medicare program will exceed $25 billion. Expenditures for physicians' services are the second largest component (after hospitals) of Medicare spending,

---

[1]Part B expenditures specifically excluded from this report include: (1) all services (primarily facility fees) that are billed by outpatient hospitals, ambulatory surgical centers (ASCs), and other nonphysician providers, (2) durable medical equipment and other supplier services such as ambulance, and (3) group practice pre-payment plans.

and the third largest Federal domestic program. Over the past 10 years (1978-1987), Medicare physician expenditures have increased at annual compound rates of 16 percent. Over the next 10 years, even without any program expansions, Medicare spending for physicians' services will likely triple. Furthermore, about the year 2005, total Medicare spending is expected to exceed spending on Social Security, in part, because of the rapid increase in physician spending. This will make Medicare the country's largest entitlement program.

About 15 percent of the increase during the past 10 years was due to an increase in the number of beneficiaries, who have increased at about 2 percent a year. About 40 percent was due to increases in payments per service, which are largely the result of adjustments for inflation. About 45 percent of the growth resulted from "residual" VI-related factors, including growth in the number of services (including volume increases from new services and technology), and shifts from less expensive to more expensive services (greater intensity).

The report provides background information on VI issues, including a discussion of factors contributing to physician expenditure growth (Chapter 1), presents trends in VI growth and reviews the research commissioned by the Department to analyze VI related issues (Chapter 2), reviews Medicare's and private payer's experiences with VI control methods (Chapter 3), discusses options for protecting beneficiaries and the Medicare program from the impact of VI (Chapter 4), and concludes with a discussion of possible impacts of a resource-based relative value scale (RBRVS) on VI (Chapter 5).

FACTORS AFFECTING EXPENDITURES FOR PHYSICIANS' SERVICES

Three major forces drive increases in Medicare expenditures for physicians' services: price increases, change in the size and composition of the beneficiary population, and growth in VI of services to members of the population including technology and new services. After briefly reviewing the first two forces, the remainder of this chapter discusses forces driving increases in VI.

Price Increases. Prior to a fee freeze in July 1984, the Medicare prevailing charge screen was generally updated annually by the Medicare Economic Index (MEI), which reflects increases in physicians' practice costs (see Appendix A). MEI-adjusted prevailing charges have been increased several times since implementation of the freeze. On May 1, 1986, adjusted prevailing charges were increased by up to 4.15 percent for participating physicians only, and on January 1, 1987, adjusted prevailing charges were increased by up to 3.2 percent for all physicians. Effective for services rendered April 1, 1988, adjusted prevailing charges for primary care services performed by a participating physician were increased by up to 3.6 percent, while other physicians' services performed by a participating physician increased by up to 1.0 percent. For January 1989, adjusted prevailing charges for primary care services performed by a participating physician increased by 3.0 percent, while all other physician services performed by a participating physician increased by up to 1.0 percent.

In addition, there have been other recent payment changes that affect prices (see Trustees' reports for 1987 and 1988), such as the reductions for overpriced surgical procedures, the differential payments for participating and nonparticipating physicians, and a bonus for primary care services provided in rural health manpower shortage areas. Allowed charges can increase in other ways in addition to the increases in adjusted prevailing charges. For example, customary charges that are below the adjusted prevailing can increase more rapidly than the MEI.

Annual increases in Medicare allowed charges per service have usually been lower than the general rate of inflation in physician fees. For example, from 1967 to 1986, the net increase in allowed charges per service was greater than the increase in the physician fee component of the Consumer Price Index only three times (Trustee's report, 1988). While price increases have been responsible for a significant portion of the total expenditure increases per beneficiary over the past 10 years (about 40 percent), it is clear that factors other than price increases per service are responsible for total program expenditure increases.

Growth and aging of Medicare population. The number of beneficiaries covered by the Part B program increases at a rate of about 2 percent per year. In addition, Medicare beneficiaries are increasingly consisting of an older age mix. For example, in 1966, 6.2 percent of Part B beneficiaries were aged 85 or greater, whereas by 1986 this percentage increased to 10.3 percent. While this change in age mix has possible long run implications, it is unlikely to have contributed much to the recent rapid increases in Part B expenditures because the changes in age mix are so gradual. It is estimated that for the year ending June 30, 1988, aging of the Medicare population accounted for only about $4 million of a projected $3.9 billion increase in incurred benefits for the elderly.

VI-related factors. VI includes all factors contributing to physician expenditure increases other than changes in payments for individual services and in the covered population. The most important aspect of Medicare's physician payment system is that it gives physicians and beneficiaries little or no incentive to control VI of services.

Ideally, a full explanation of factors responsible for Part B growth would be developed from a full clinical and economic model of physician and patient behavior that incorporates all clinical and economic incentives inherent in the payment practices of all third party payers. Considering the many variables determining the physician services market, it is not realistic to expect that a model can be developed that can attribute recent changes in physician expenditures to specific factors. Problems in developing a full model are compounded by inadequate data and data measurement problems, multiple simultaneous changes in the Medicare program, technological advances, and the interactive effects of Medicare and other third party payers.

Time series data are very limited because until very recently there was no common procedure coding system and there were no nationally representative data files containing detailed counts of procedures. Moreover, two of the four Part B Medicare annual data (BMAD) files now available for time series analysis are sample files. These 5 percent sample files of providers and beneficiaries cannot easily be used to study small areas.

Isolation of influential variables is difficult because major Medicare program changes occurred almost simultaneously, such as the physician fee freeze, lab payment changes, the implementation of the Medicare participating physician program, hospital prospective payment system (PPS), and peer review organizations (PROs). Other changes cannot be easily identified or measured. These include new developments in technology and medical practice, growth in ASCs, reductions in private sector use of inpatient hospital services, changes in private sector payment methodologies, private sector trends toward more patient cost sharing, and physician price discounting. Nevertheless, a number of major VI-related factors can be identified that either affect physician willingness to supply services or affect beneficiary demand for these services. These factors are discussed below.

Forces driving the growth in VI. Among the factors driving VI growth are: (1) payment incentives, (2) technology, (3) physician willingness to provide services, and (4) factors related to beneficiary demand for services.

Payment mechanisms have contributed to VI growth because:

- The fee-for-service payment system gives physicians no incentive to control growth and provides direct rewards for promoting growth.

- Physicians have considerable discretion as to how they define and report services they provide. They might assign more remunerative codes to services for which they formerly assigned less remunerative codes ("upcoding") or they might bill separately for services for which they formerly billed under a single code ("unbundling").

- The current payment system contains no incentives to encourage physicians to reduce charges for procedures to reflect technological improvements, increased experience, and other factors that might lower production costs.

- Medicare often pays more to specialists than nonspecialists for similar services, and specialists represent a growing fraction of Medicare providers.

Technology has contributed to VI growth because:

- New services and treatment methods have emerged. Many of the procedures that accounted for recent growth in physician expenditures were either rarely performed or unknown when the Medicare program was legislated.

- Despite research on the effectiveness of services for certain specified conditions, there is little research base for determining whether procedures are effective in many of the circumstances in which they are used.

Physicians have become more willing to provide services because:

- There are more physicians per 100,000 of population and more of those physicians are trained in the specialties that provide the costly high technology services.

- The technology to provide services that appear useful to patients has expanded.

- The risk of malpractice suits may encourage physicians to provide services for "defensive" reasons.

Patients may be more willing to receive services because:

- Services have become available for conditions that were untreatable 20 years ago (e.g., coronary artery bypass grafts, total joint replacement).

- The inconvenience and risk of many services has dropped dramatically (e.g., ambulatory surgery, decreased operative times).

- Medigap coverage has, along with Medicaid coverage of many Medicare beneficiaries, eliminated some or all coinsurance costs for about 80 percent of beneficiaries; the growth in acceptance of assignment has reduced the cost of balance billing. As a result, many beneficiaries have no or minimal out-of-pocket cost for any covered medical service.

Issues related to each of this factors are summarized below.

Payment incentives. It has been well established that the VI of physician services is partly affected by the way that physicians are paid for their services (Pauly, 1970; Manning et al., 1988). For example, under a fee-for-service system, physicians receive an extra payment for each service rendered. Thus, under a fee-for-service payment system, physicians have strong economic incentives to maximize the number of services provided in order to increase practice income. These incentives to increase VI are not present in some alternative payment approaches, such as capitated plans which receive a lump-sum payment for all care required by covered beneficiaries for a specified time period.

Medicare still pays for most services through traditional fee-for-service arrangements in which a separate payment is made for each service rendered by the physician. Clearly this arrangement provides few incentives for efficiency and may actually encourage the overprovision of services. In addition, the current payment system contains no incentives to encourage physicians to reduce charges for procedures to reflect technological improvements, increased experience, and other factors that might lower production costs.

Relative pricing of procedures. Physician willingness or preference to provide specific services or procedures is thought to be at least partially influenced by relative payments for the services. Within

clinical reasonableness, relative payment levels could influence clinical decisions as to which services to provide (Hsiao et al., 1987). Some services could become "overpriced" over time, for example, because the current method used to pay for physician services contains no mechanism for adjusting payment rates to reflect changes in physician skill, productivity, or resources necessary for providing the service.

Shifts in distributions of procedure coding ("upcoding"). Some physicians' services, such as visits or consults, are described by a series of procedure codes for which the physician can often receive a higher payment to reflect additional or more intensive services. For example, the current coding system for visits has six coding levels with progressively higher payments. One way for physicians to generate additional income or to counteract price freezes or reductions is to bill for more expensive visit or procedure codes than previously (e.g., bill for an extended visit rather than for an intermediate office visit). There are substantial reasons to believe that intensity of visits is increasing. Mitchell et al. (1988) documented an increase in the length of office visits in the 1970s. Upcoding is a difficult issue to analyze because shifts in coding mix do not necessarily imply improper billing on the part of physicians. Medical visit coding terminology is such that physicians have discretion to report the same service using different codes. In addition to improper coding, there could be other factors that led to increases in intensity of office and hospital visits.

Unbundling. Unbundling refers to the submission of separate bills for services that were previously included in the charge for another service. For example, some carriers allow separate billing for patient monitoring by Swan-Ganz catheters when performed during certain coronary surgeries, such as artery bypass grafts. In addition, surgeons typically bill a single global fee for a surgical procedure that includes follow-up visits. While most carriers have screens to enforce their global fees, individual physicians might unbundle services if they have historically used a broader definition of a global fee than the carrier. A strategy of preventive packaging of selected services might prevent future unbundling.

Shift from hospital to ambulatory treatment settings. Because of a number of factors, such as changes in medical practice and technology, incentives created by Medicare's PPS and PROs, and growth of ASCs and other ambulatory centers, physician services have grown more rapidly in office and outpatient settings than in hospital settings. As a result, the percentage of physician expenditures accounted for by inpatient hospital settings dropped from 61 percent in 1983 to 47 percent in 1986 (Table 2). This shift has several implications for Part B spending, some of which increase Part B physician spending and some of which decrease Part B physician spending.

For example, an increase in Part B expenditures might be expected for radiology services and certain special tests that shifted to office settings. This results because when the service is performed in an inpatient hospital setting, physicians charge only for professional interpretation of the results, whereas the technical portion of the service is covered under the hospital payment and paid under Part A. In contrast, when these services are performed in an office setting, the

physician submits a bill to Part B for both the professional and technical service. This shift could affect Part B expenditures in other ways. For example, researchers at the Center for Health Economics Research (CHER) (1988) hypothesize that, for at least some services, hospital and physician services can partially serve as substitutes for one another. More physician visits in nonhospital settings might be needed to substitute for care that patients would have received from nurses and others in the hospital prior to the recent reductions in length of stay, especially for patients who are discharged earlier or who are never admitted. It is also possible that Medicare is now being charged for some test interpretations and other services that might have been previously performed by residents in teaching hospitals who cannot charge Part B Medicare and that were not billed for by a staff physician.

In general, however, it is unclear that the shift from hospital to outpatient settings has accounted for much of the total expenditure increase for physicians' services. For example, shifts from inpatient to outpatient hospital settings generally do not affect physicians' spending for radiology services because the payment for the technical component would be included in the facility fee, not the physician fee. Further, the percentage of total physician expenditures in 1987 accounted for by diagnostic x-ray was only about 4 percent in office settings and 2 percent in outpatient hospital settings. Because they account for such a small percentage of the total physician expenditures, changes in spending levels for these physicians' services cannot account for much of the overall spending increases that have occurred. Much of the increased expenditures in office settings is probably due to the provision of additional services beyond those involved in the shift in place of service.

In addition, Part B billings for many other services are unaffected by place of treatment. Global fees for surgical procedures usually cover both the surgery itself and any follow-up visits by the surgeon during a specified time period whether in or out of the hospital. Physicians treating patients for medical conditions submit separate charges for each visit regardless of setting. Shorter hospital stays might actually decrease expenditures to the extent that charges for office visits are lower than charges for comparable hospital visits. Shorter stays may also reduce the opportunity to provide services such as radiology and consultation services. Reductions in length of stay result in fewer hospital visits, but do not necessarily result in an equivalent increase in the number of visits in ambulatory settings. For example, in a survey of physicians' post-hospital office visit patterns for 23 surgical procedures (Rosenbach et al., 1988), physicians reported virtually no change in their post-hospital office visit pattern between the pre-PPS and post-PPS time periods while length of stay was falling.

Changes in payments for lab services. There have been important VI-related changes in payments for lab services such as a "direct billing" provision effective July 1984, which meant that physicians could no longer bill for clinical laboratory services that they did not personally perform. It is believed that this direct billing provision might provide an incentive for physicians to set up labs in their own offices. This possible incentive makes it difficult to distinguish volume changes that might result from other factors such as technological advances or the fee freeze.

There have been other important VI-related changes in lab services. Payments for lab services are based on a fee schedule that requires no beneficiary coinsurance; this removes an incentive to restrain use of these services. Some volume changes that might appear to result from changes in hospital usage may actually be due to other factors such as technology. Recent technological changes in lab equipment, including the widespread use of microprocessors, have significantly reduced the size and cost of some office lab equipment, making it possible for physicians to purchase this equipment for use in office settings. Regardless of hospital usage patterns, physicians who own their own equipment will have opportunities as well as incentives to increase office lab tests. Besides the added convenience for the physician and patient of being able to perform tests in office settings, there are strong financial incentives to increase volume both to increase revenues and to recoup the capital investment. Lab equipment manufacturers offer anecdotal support for this argument through advertisements of rapid returns on investment for a variety of office lab and testing equipment.

Other program payment changes. There have been a number of program changes that either directly affect physician spending levels or make it difficult to obtain and analyze trend data (see Appendix to HHS, 1987c and annual Trustees' Reports). For example, prior to October 1, 1983, hospitals were allowed to combine the bill for the professional and technical components of laboratory and radiology services (i.e., these services were not separately identifiable). Therefore, data for services such as radiology and pathology from previous periods are understated.

Other changes, such as the implementation of the HCFA common procedure coding system (HCPCS), which is based on Current Procedure Terminology (CPT-4), might have had some effect on VI. In some instances, changes in the coding system might have provided more opportunities for upcoding, unbundling or other billing changes. For example, HCPCS contains six office codes for established patients whereas, prior to the implementation of HCPCS, many carriers used only two or three codes for these services.

Technological advances in health care. Technology has contributed to VI growth because new services and treatment methods have emerged. While many technical advances in health care benefit patients, they also may increase costs in several ways, such as:

- The development of new technologies is often accompanied by the need for additional services (e.g., transplants require immunosuppressive drugs, end stage renal disease treatment requires supplies).

- Even when the new service is designed to replace an established service, it may be more expensive than the older one.

- As new technology diffuses, it may be used additively rather than as a substitute for the older technology (e.g., magnetic resonance imaging along with x-rays and other diagnostic imaging). This may occur because of insufficient scientific information to limit use of overlapping technologies, fear of

malpractice, attempts to gain a marketing advantage, or practitioner reluctance to modify established practice methods.

- Technologies that benefit a specific condition are often applied to other conditions where benefit is less certain, because of both physician hopefulness and patient expectations and requests.

Investment issues. Capital investment in both training and equipment creates a need to recover those investments. Not only do physicians need to treat patients and perform procedures in order to recover the cost of their training, but hospitals aggressively court physicians who will, in turn, refer patients to the hospitals' inpatient and outpatient facilities. Even without the potential conflicts of interest created by joint ventures, in which a hospital and a physician jointly own a piece of equipment to which the physician refers patients, the need of the hospital to fill beds and use operating suites and magnetic resonance imaging devices creates an environment strongly conducive to VI growth for physician services. The burgeoning growth of physician office complexes that are built by hospitals testifies to the rewards that hospitals expect from these relationships.

Effectiveness. As pointed out by Eddy (1988), direct evidence of effectiveness is available for only a fraction of medical services. The generally substantial level of uncertainty promotes VI growth in two ways: (1) physicians are likely to engage in extra tests and treatments because the effectiveness of any one test or treatment is uncertain, and (2) given the uncertainty as to whether and when tests and treatments are effective, physicians are vulnerable to being influenced by economic considerations.

Growing supply of physicians. As has been reported elsewhere, the supply of physicians has increased dramatically over the past 20 years. For example, the number of physicians per 100,000 population from 1960 to 1985 increased from 151 to 237, a 57 percent increase over this 25-year period (American Medical Association (AMA), 1986). The implications of this increased supply of physicians in regards to Part B expenditures remain unclear (Pauly, 1988; Feldman and Sloan, 1988; Cromwell and Mitchell, 1986). For example, increased physician supply might increase expenditures in areas that currently have unmet need or increase demand for physician services because of easier access to service. In theory, increased competition among physicians in other areas might encourage physicians to accept lower prices per service, but this potential for program savings through price reductions might be partially offset by increased volume. There is some evidence (Rice, 1984; Barer et al., 1988; Holahan and Scanlon, 1979) to support the hypothesis that physicians stabilize income by inducing demand for their services. During this period, however, physician mean income has risen steadily despite the growing number of physicians. It should also be noted that the entry of new physicians in the market might have contributed to Medicare expenditure increases because prior to limitations established by OBRA 1987, new physicians could establish high customary charge profiles while established physicians are constrained by their customary charge profiles.

Increasing specialization of physicians. The U.S. physician population is becoming more specialized. For example, between 1975 and 1985, the number of general practitioners in the U.S. declined by 36 percent while the number of all other physicians increased by about 50 percent (AMA, 1986). This increased specialization has important implications for Medicare expenditures. Specialized physicians seem to perform more complex and expensive procedures than general practitioners, and they perform more complex services for similar patients (Cromwell, 1985). Under the current Medicare payment system, specialists often receive higher payments than nonspecialists when they perform a similar service.

Malpractice avoidance. Some suggest that in order to avoid possible malpractice suits physicians may order or provide more tests and other services than are clinically necessary (HHS, 1987b). "Defensive medicine" has been cited as a reason for the rising caesarean section rate, the increasing rate of skull x-rays and computerized tomography (CT) scans, and the growing use of exercise tolerance tests and cardiac monitoring.

Cost to the beneficiary. Research indicates that lower out-of-pocket payments increase total volume of services and level of expenditures for physicians' services for medical care consumers under age 65 (Manning et al. 1988). This finding is consistent with the original purpose of imposing an annual deductible and a 20 percent coinsurance for services covered under Part B as a volume control mechanism. Without some cost sharing, beneficiaries may simply seek all care that promises even minimal benefit or uncritically accept physician recommendations, regardless of how costly the service might be.

A number of factors have decreased the immediate real out-of-pocket cost of physicians' services. Some suggest that this has increased beneficiary demand or willingness to accept additional services. Inflation has reduced the real costs of the annual deductible to Medicare Part B beneficiaries. If the original $50 deductible established in 1966 had been increased to keep pace with general inflation, the deductible would now be over $180 instead of the current $75.

Another significant factor that tends to decrease the cost to the beneficiary for an additional service is the widespread purchase of "Medigap" policies that often cover the deductible and copayment. Data from the National Medical Care Utilization and Expenditures Survey for 1980 (Garfinkel and Corder, 1985) show that approximately 70 percent of beneficiaries are covered under some type of Medigap policy (the coverage of these Medigap policies varies, but they often cover the deductible and coinsurance). Since an additional 10 percent of beneficiaries are covered under Medicaid, only about 20 percent of beneficiaries are thought to be subjected to all of the out-of-pocket costs associated with Medicare's statutory deductibles and coinsurance.

Another factor contributing to decreases in cost per service to some beneficiaries is the increasing assignment rate due to the implementation of the participating physician (PAR) program and other efforts to encourage physicians to accept assignment. Assignment rates have increased from slightly less than 50 percent of allowed charges in 1980 to about 80 percent in 1988 (Table 3). Patients who are covered by Medigap

and receive services from a PAR physician can receive covered services at no out-of-pocket cost, as can most patients covered by Medicaid.

The recent implementation of the maximum allowable actual charge (MAAC) for nonparticipating physicians limits the amount these physicians can increase charges. Since January 1, 1987, a MAAC is computed for each service provided by each nonparticipating physician and is updated annually. This charge limit somewhat reduces out-of-pocket costs for some beneficiaries. Costs to some beneficiaries will be further reduced by the recently enacted Medicare Catastrophic Coverage Act, which will place a cap on annual expenditures by beneficiaries.

Finally, there is thought to be a relationship between personal income and demand for medical services. It has been hypothesized that beneficiaries might increase their demand for health services as their income increases. For example, researchers at the Congressional Research Service (CRS, 1988) have reported that from 1980 through 1985 real income of persons 65 and over has increased somewhat more rapidly than for all households (11.3 percent vs. 8.9 percent). They suggest that the more rapid increase in income occurring among the elderly compared to the general population might have caused demand for health services by Medicare beneficiaries to have increased somewhat more rapidly than among the general population. Given the large percentage of Medicare beneficiaries that have Medigap policies or Medicaid, and the increases in assignment rates and implementation of MAAC limits, the effect of income changes is likely to be small.

CHAPTER 2

RESEARCH IN SUPPORT OF THIS REPORT

Considering all the important factors affecting VI that have occurred almost simultaneously, it is difficult to separate and measure their relative influence. The Department made an extensive effort to gain more information about VI issues and to respond to the congressional mandate. National trends in total allowed charges for physicians' services were examined by HCFA staff using national Part B data files. The Department consulted with nationally recognized health research experts and commissioned four extramural research studies to provide data on geographic variation in expenditure growth and to perform a wide variety of VI-related analyses. These four extramural studies were as follows:

(1) CHER studied Part B claims for four States (Alabama, Connecticut, Washington, and Wisconsin) for the 4-year period 1983-1986. Total physician expenditures in these four States represent about 6 percent of the national total.

(2) Mandex, Inc., analyzed Part B claims for 1983 and 1985 for five States (Indiana, Washington, South Carolina, South Dakota, and North Dakota), representing about 5 percent of national spending.

(3) The Urban Institute studied a 5 percent national sample of claims for 1983 and 1985.

(4) The University of Minnesota Policy Research Center performed theoretical and conceptual analyses of several VI related issues including an analysis of possible RBRVS impacts.

Each of these four studies is described briefly below.

CHER. CHER attempted to measure the impact of the recent Medicare physician fee freeze on Part B expenditures, volume of services, and coding of services. As part of this effort, CHER disaggregated per beneficiary increases in expenditures into portions attributable to different types of service, specialties, and procedures. Variations in expenditure increases across selected geographic areas were also examined. Econometric analyses were conducted in an attempt to evaluate the physician fee freeze effects while adjusting for changes in physician supply and beneficiary demand, as well as for implementation of the hospital PPS and other selected payment changes.

To study these issues, CHER analyzed 100 percent Part B claims data from four States (Alabama, Connecticut, Washington and Wisconsin) for calendar years 1983 through 1986. This time period included an 18-month baseline period prior to the physician fee freeze (established by P.L. 98-369) from which to establish trends, the full fee freeze time period, and a 7-month period following the freeze for Medicare participating physicians.

Mandex, Inc. Under contract to the Assistant Secretary for Planning and Evaluation, Mandex studied several physician payment issues including an analysis of factors accounting for the rapid growth of Medicare Part B payments for physician services. Examples of factors studied include: (1) increases in the number of Part B enrollees and in the number of beneficiaries meeting the $75 deductible, (2) potential use of more complex codes by physicians when describing services performed, (3) whether there were increases in the volume of services provided such as additional follow-up visits and increased ordering of ancillary services, and (4) factors related to the implementation of the hospital PPS, such as increases in surgical services provided in outpatient settings.

These analyses are being conducted over two phases and will be based on 100 percent claims data from five States (Indiana, Washington, South Carolina, South Dakota, and North Dakota). The first phase has been completed and covers calendar years 1983 through 1985. The second phase, which is now being initiated, will cover calendar years 1986 and 1987, and will also include claims from Pennsylvania, Delaware, and the District of Columbia).

Urban Institute. Under the sponsorship of the National Center for Health Services Research and Health Care Technology Assessment, with supplemental funding by HCFA, the Urban Institute studied a variety of physician payment issues, such as geographic variations in expenditures and factors responsible for Part B expenditure growth between 1983 and 1985. Both descriptive and econometric analyses were conducted in an attempt to explain causes of Part B expenditure growth. The major source of data for these analyses is from a 5 percent national sample of beneficiary claims records (1983 data were from the Bill Summary File and 1985 records were from the BMAD Beneficiary file).

University of Minnesota Policy Research Center. The University of Minnesota Policy Research Center, which includes researchers at both the University of Minnesota and the University of Pennsylvania, was provided support through HCFA to study three issues related to VI of physician services: (1) the development and analysis of alternative methods to control VI of physician services, (2) examination and comparison of Medicare carrier volume controls with similar practices in the private health insurance field and (3) consideration of the potential impact of implementing an RBRVS on VI of physicians services.

In this chapter we provide an overview of national trends in VI, then review the findings of the first three studies by CHER, Mandex, and the Urban Institute, which provide trends in geographic variation and attempt to identify and disaggregate factors responsible for VI growth. Findings from the fourth study by the University of Minnesota Policy Research Center are incorporated in the chapters which follow. All three independent studies reviewed in this chapter attempted to identify and measure these factors responsible for Part B growth using a different approach. Each study used different statistical techniques and selected different explanatory variables. Note that during part of the period that each study analyzed, there was a fee freeze (from July 1984 through April

1986 for participating physicians and December 1986 for nonparticipating physicians), so increases reported by these studies tend to be lower than the 16 percent annual compound rate reported for the total program over the past 10 years.

RECENT NATIONAL TRENDS

Table 2 shows national trends in total allowed charges[1] for physicians' services by type and place of service from 1982 through 1987. During this 5-year time period, total allowed charges for physicians' services grew from $15.1 billion to $26.6 billion, an $11.5 billion increase (76 percent). By type of service, the increases in total allowed charges between 1982 and 1987 were as follows:

- Surgical related services, including surgery, assistant-at-surgery and anesthesia, increased by 85 percent and accounted for 42 percent of the overall increase in expenditures for physicians' services.

- Medical care, primarily physicians' visits, increased by 52 percent and accounted for an additional 27 percent of the increase.

- Consultations increased by 127 percent and accounted for 6 percent of the overall growth.

- Diagnostic radiology services increased by 133 percent and accounted for 12 percent of total growth. Therapeutic radiology services increased by 109 percent and accounted for 2 percent of overall growth.

- Clinical lab services increased by 84 percent, accounting for 11 percent of overall growth.

Inpatient settings. Table 2 shows that allowed charges for physicians' services in inpatient settings increased by $2.5 billion or 27 percent between 1982 and 1987. The largest increase during this period, however, occurred between 1986 and 1987 (an 11 percent increase).

The increase in expenditures for physicians' services in inpatient settings is even more striking because it occurred during a period that Medicare hospital admissions and days decreased. Table 4 shows that Medicare allowed charges for physicians' services per admission increased between 1982 and 1987. Notably, allowed charges per inpatient admission increased by 10.6 percent between 1986 and 1987.

Between 1982 and 1987, allowed charges for inpatient consultations nearly doubled. In addition, spending for physicians' services for inpatient diagnostic radiology services increased by more than 60 percent

---

[1]Allowed charges include Part B trust fund expenditures, beneficiary deductibles, and coinsurance.

during this period. These increases are even larger when considered on a per admission basis.

Because Medicare allowed charges for physicians' services increased by larger amounts in other settings, there was a significant drop in the share occurring on an inpatient basis. In 1982, before PPS, admission reviews by PROs, and other factors influencing hospital usage, 62 percent of allowed charges for physicians' services were for inpatient services. By 1987, this percentage dropped to 45 percent.

Physicians' offices. Allowed charges for physicians' services in office settings increased 102 percent between 1982 and 1987, accounting for 39 percent of total growth. During this period, the share of Medicare spending for physicians' services in the office went from 29 percent to 32 percent.

Surgical services. About one-half of the increase in surgical spending over the 5-year period from 1982-1987 occurred in hospital outpatient department settings (Table 2). Expenditures for surgical services furnished on an inpatient basis accounted for about one-quarter of the growth in surgical spending during this period, primarily because of an increase from 1986 to 1987. This spending was generally stable from 1983 to 1986 but grew by almost 11 percent from 1986 to 1987. The remainder of the increase primarily occurred in office settings (20 percent), with all other places of service accounting for 5 percent of the increase.

Medical services. About two-thirds of the increase in medical services from 1982 to 1987 occurred in office settings. From 1983 to 1986, expenditures for medical services in inpatient settings actually declined, probably due to decreases in hospital admissions and lengths of stay. Nonetheless, 1987 witnessed a total 15 percent increase in medical services compared with 1986. Furthermore, national BMAD data for 1985 to 1987 (Tables 5 and 6) show that there was an increased use of more expensive codes for both office and hospital visits.

Consultations. Expenditures for consultations grew rapidly in all treatment settings (Table 2). About 59 percent of the growth in expenditures for consultations occurred in inpatient hospitals, 32 percent in office settings, 6 percent in outpatient hospitals, and 3 percent for other settings.

Diagnostic radiology. During the 1982-1987 period, expenditures for diagnostic radiology grew by almost 114 percent (Table 2). About 42 percent of this growth occurred in physician offices, 31 percent in outpatient hospitals, 25 percent in inpatient hospitals, and 3 percent in other settings.

CHER FINDINGS

CHER (1988) reported that expenditures per beneficiary in Alabama, Connecticut, Washington, and Wisconsin combined increased 29.5 percent from 1983 to 1986. Table 7 shows that the increase varied from 13.6 percent in Wisconsin to 46.4 percent in Washington State. Washington's rapid spending growth brought its per beneficiary expenditures up to the levels of the other three States.

Table 8 shows that increased spending on surgical procedures in these four States was by far the most important source of spending growth, accounting for 35.8 percent of spending and 41.3 percent of the increase in physician payments. Specialized tests such as ECGs accounted for only 5 percent of spending, but for 11 percent of spending growth. Table 9 shows that payments to physicians for services performed in outpatient departments and ASCs increased by over 260 percent during the 3 years (from $11.84 per beneficiary in 1983 to $47.46 per beneficiary in 1986). In contrast, there was virtually no growth (1 percent over 3 years) in expenditures per beneficiary in inpatient settings.

Examining trends in surgery further, CHER showed that the much of this increased growth was accounted for by a small number of diagnostic (e.g., colonoscopies) and therapeutic (e.g., cataract lens implants) surgeries that increased rapidly (Table 10). These descriptive observations suggest that the development and dissemination of technological advances may be a prime contributor to Part B growth.

CHER also examined data for office and hospital visits to determine whether there has been a shift in the mix of codes. CHER found that the two simplest follow-up visit codes (minimal and brief) have declined as a percent of total visits, whereas the more complex visit codes all increased in frequency (Table 11). CHER cautions that, while there is evidence of upcoding, it is not possible to determine the cause of this upcoding with certainty. Although physicians could be upcoding an unchanged mix of services to generate additional income, the shift in the mix of codes used may reflect a higher level of services provided.

To attempt to control for simultaneous changes in a wide variety of variables of interest, CHER researchers attempted to apply a regression analysis to the trends in Part B quantities over the period 1983-1986. The independent variables included in their econometric equations included factors such as number of physicians, per capita income for the total population, Medicare inpatient days per capita, health maintenance organization (HMO) penetration, and degree of urbanization as well as an indirect measure of the effect of the fee freeze. They reported that the coefficients in their regressions suggest that growth in numbers of physicians was a strong contributor to physician volume increases. CHER claims that the decrease in real dollar payments during the fee freeze contributed modestly, at most, to volume increases, whereas CHER reported that a reduction in inpatient days contributed to volume growth in a complex, delayed way, presumably through a lagged substitution of physician care for hospital based care. CHER speculated that its findings suggest that inpatient days are short run complements and long term substitutes for Part B expenditures. This suggests that over the short run reductions in inpatient days produced Part B savings, but that over the long run they caused physician expenditures to increase.

MANDEX FINDINGS

The Mandex (1988) analyses to identify and explain factors causing physician expenditure growth were based on an analysis of expenditure data by type and place of service for 1983 and 1985. The principal finding was

that beneficiary growth in the five States (Indiana, Washington, South Carolina, South Dakota, and North Dakota) was 4.4 percent, but total outlays grew by approximately 18.7 percent ($138 million) over the 2-year period (Table 12). Growth ranged from a low of 10.5 percent in North Dakota to a high of 27.3 percent in South Carolina.

A little more than one-half (53 percent) of the growth in expenditures that occurred from 1983 to 1985 in these five States was due to increases in ambulatory surgery, primarily in outpatient hospital settings ($53 million of the total $138 million expenditure increase) (Table 13). Allowed charges for inpatient surgery during 1983-1985 declined by $3 million. More complex surgeries resulted in a doubling of the average allowed charge for outpatient surgery.

Growth in outpatient surgery, with the possible exception of cataract surgery, did not appear to substitute for, but rather supplemented, inpatient hospital surgery. For example, even if it were assumed that all the observed decline in inpatient surgeries had been shifted to outpatient departments, only 8.3 percent of the increase in outpatient surgeries could be explained by this shift. The growth in relatively expensive outpatient surgery procedures and a decrease during this period in the volume of relatively low priced laboratory tests due to changes in the billing system under PPS led to a more intense mix of services in 1985 than 1983.

Changes in office visit and procedure coding and increased ordering of ancillary services were found to have positive explanatory effects, but to account for only approximately 4 percent of the total increase in Part B physician services.

In an analysis of overall factors contributing to expenditure growth, Mandex reported that 21 percent of the expenditure increase for physician services in its five States during the 1983-1985 time period was due to fee updates, 24 percent due to Part B enrollment increases, 20 percent due to increases in the number of beneficiaries who used services and for whom a claim was submitted to the carrier, i.e., "claimants," 4 percent from the use of more intensive procedure code, i.e., "upcoding," and 31 percent due to additional services and all other factors.

URBAN INSTITUTE FINDINGS

The Urban Institute examined expenditure growth between 1983 and 1985 by region using a 5 percent national sample of beneficiary claims from two different data sources. Urban reported that, in general, the New England and Middle Atlantic States, as well as the Mountain region, had the fastest growth rate in Medicare expenditures (19.1 percent, 18.8 percent, 21 percent, respectively), whereas the East North Central (11.5 percent) and Pacific (10.2 percent) regions had the slowest growth rates for the 2-year period (Table 14). These results, along with results from the two studies above, show that expenditure growth has varied across geographic areas and types of service and that these differences need to be considered when developing options to control expenditure growth.

The Urban Institute (1988) also performed econometric analyses to examine factors responsible for recent changes in Medicare outlays. The unit of analysis for its study was type and place of physician service, aggregated by Metropolitan Statistical Area (MSA). Areas outside of an MSA in each State were combined into a single non-MSA area.

Based on the regression coefficients of these aggregate data, Urban concluded that the most important factors related to expenditure growth during this period were the increased incomes of the elderly and increased assignment rates, both of which increased service volume by about 3 percent during the 2-year study period. (Incomes of the elderly increased by about 13 percent and assignment rates increased from 51 percent to 67 percent during this period.) Urban also believes the introduction of new technologies plays an important role in increasing expenditures but could not measure this factor. Billing changes such as the termination of combined billing by hospitals for radiology, pathology, and other services also contributed to physician service growth. In contrast to CHER, the Urban Institute concluded that other factors studied, such as the implementation of PPS, the fee freeze, and increased physician supply appeared to have small or negligible effects on expenditure growth.

DISCUSSION

Descriptive data from these studies provide important clues as to types and places of service that have experienced the most growth and factors that drive expenditure growth for individual procedures. Despite differences in methodololgy and data sources, these three studies, along with results from an earlier study on trends in physician spending (Fisher, 1988), show that there has been dramatic growth in ambulatory surgery, especially for cataract surgery and procedures, such as colonoscopies. This suggests that technological developments (e.g., flexible scopes and the extracapsular technique for cataract surgery) are an important factor affecting growth. These studies also indicate that there has been some upcoding of visits that appears to vary in amount across States.

Many of the surgical services with high rates of increase would appear to involve three kinds of change in technology and clinical practice: (1) some services (e.g., cataract and hernia procedures) might have become more accessible because they are now regularly performed in outpatient settings, or involve shorter recovery times or more complete restoration of function, (2) procedures with wide application (e.g., joint replacements) might have diffused to a larger number of providers and centers, and (3) some procedures have been increasingly used for diagnostic and other medical reasons (colonoscopy).

It also appears that the medical indications for many high growth services are not well defined. For example, the clinical threshold at which procedures such as cataract surgery or joint replacements are indicated is unclear, and the indications for diagnostic procedures such as colonoscopy is debatable.

The descriptive findings also suggest that to the extent that surgery represents the largest single component of the increase in allowed charges, outpatient surgery does not appear to substitute for inpatient surgery. The findings do not provide strong evidence that outlay growth resulted primarily from a PPS-induced shift in services outside the hospital.

The econometric analyses, which attempted to disaggregate specific causes of growth, however, contain a number of important technical limitations. For example, neither CHER nor Urban were able to directly measure recent technological developments and growth in ASCs, and both had significant omitted variables, such as reductions in non-Medicare hospital use. CHER did not consider the effect of reductions in cost of service to the beneficiary which might have resulted from increased assignment rates.

Further, most of the factors considered in these studies are highly correlated. For example, the Medicare fee freeze coincided with most hospitals coming under PPS. In addition, because costs to patients and revenues for physicians tend to be lower (all other things being equal) where assignment rates are higher, it is difficult to determine whether patient or physician behavior drove any volume change.

In addition, all three studies focus on a relatively short time period, which makes it difficult to establish trends. The Urban and Mandex analyses were conducted using aggregate data for only 2-calendar years, 1983 and 1985. The story that might emerge from selecting two other time periods might be much different. For example, the more recent data in Table 2 suggest that current trends may differ from what existed during the 1983-1985 period. Outpatient surgery grew much more rapidly from 1983 to 1985 (300 percent increase over 2 years) than from 1985 to 1987 (67 percent increase). Also, there was a decline in inpatient surgery spending from 1983 to 1985 (2 percent decrease) but a fairly large recent increase (from 1986 to 1987 there was an increase of almost 11 percent).

It should be noted that the Mandex findings regarding additional claimants require further analysis and clarification. For example, the appearance of these new claimants might be an artifact of increased provider submission of claims resulting from increased assignment rates during the period. Some beneficiaries receiving unassigned services whose charges do not exceed the deductible might not bother to file their claims with their carrier. Thus, these new claimants might simply have total annual charges that cluster about the deductible and thus not contribute meaningfully to expenditure increases for Medicare.

In summary, the descriptive data from these studies have provided valuable new information about VI growth, but it is not possible to attribute expenditure growth over the past few years to specific causes. The physicians' services market is dynamic, with many recent changes in payment methodologies by private payers, technology, medical practice, physician supply, reductions in out-of-pocket costs per service, and many Medicare program changes, such as the fee freeze, implementation of the PAR and PRO programs, and changes in lab billing. These important factors are highly correlated with one another and cannot be easily measured or

disentangled. Analysis has been further limited by a lack of long term, detailed, national time series data, and by data measurement problems. In addition, we do not know the value of additional services to the beneficiary. As a result, no firm conclusions about causes of VI growth can be reached from the econometric analyses. A similar conclusion was also reached by many health economists and researchers who attended a workshop in November 1988 on Medicare Part B volume issues sponsored by the University of Pennsylvania's Leonard Davis Institute and the AMA, (1989). It is likely that multiple factors including payment incentives, technology, physician willingness to provide services, and factors related to beneficiary demand for services have all contributed to VI growth.

CHAPTER 3

EXPERIENCE WITH VOLUME CONTROL STRATEGIES

In this chapter we discuss the experiences of Medicare, Medicaid, private insurers, and Canada with volume control strategies for physician services.

Medicare Program. Medicare law specifies that payment will be made only for items and services that are reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functions of a malformed body member. The law further assigns responsibility to carriers to assure that this requirement is executed. The process by which carriers perform this responsibility is referred to as medical review, which is conducted on either a prepayment or postpayment basis. This section summarizes Medicare program and carrier experience with prepayment and postpayment review. (See Appendix B for additional details.)

Prepayment review. Prepayment review involves the identification and review of claims for selected services that exceed a pre-established frequency threshold through the use of computer edits (medical review screens). Claims are suspended for procedures that exceed the established normative frequency for a defined time period (medical review parameters). HCFA currently mandates 13 prepayment screens that must be utilized by all carriers. In addition, carriers are free to use additional cost-effective local screens.

Claims that are identified for more intensive review are manually examined in accordance with medical policy that is developed by each carrier's medical director, in consultation with appropriate medical professionals. Depending on the degree of complexity, the determination on each claim may be made by trained claims personnel, nurses or physicians. In addition to volume controls achieved by the use of frequency screens, a number of screens, primarily in the area of visits, address intensity. For example, claims for comprehensive office visits are suspended if they exceed one in 180 days. Subsequent medical review may result in reduction to an intermediate, extended or other lower level of service.

During FY 1989, carriers spent about $56 million to conduct prepayment review on about 57 million claims. According to data from the Quarterly Carrier Medical Review Report, prepayment review provides approximately $10 in program cost savings for each administrative dollar spent in support of the program.

Postpayment review. Postpayment review is conducted by the carriers at the individual provider level. Carriers select individual providers for intensified review through a variety of techniques, such as reviewing practice patterns for high volume procedures. Providers are also identified for review based on information from a variety of other sources including beneficiary complaints and the Office of the Inspector General (OIG). The postpayment process requires the carrier to select a sample of claims for each provider identified for postpayment review. Historically,

approximately 3 percent of providers are selected annually for review (about 20,000 in FY 1988).

Medical records for selected providers are reviewed to determine whether possible overutilization abuse or fraud can be established as a preliminary finding. Providers with aberrant practice patterns are given the opportunity to review findings with the carrier medical director. Depending on the outcome, a host of progressively severe administrative actions may be initiated, depending on case findings, including referral to the OIG for civil or criminal action. Carriers refer approximately 400 cases annually to the OIG.

During FY 1988, HCFA spent about $14 million on postpayment review. Using current techniques that measure only actual savings, carrier quarterly reports indicate that postpayment review saves $1-2 in program dollars for each administrative dollar expended. Both HCFA and the carriers regard the postpayment process as an effective deterrent to overutilization, despite the fact that demonstrating a high cost-benefit has been difficult. Many of the benefits of postpayment review are indirect and difficult to quantify, causing the full value of the program to be understated. Postpayment review can provide significant but unmeasured savings through avoided costs, such as through a sentinel and educational effect in the physician community which helps reduce inappropriate billings.

Medicaid use of case management. Many State Medicaid programs have adopted managed care initiatives involving freedom of choice waivers authorized by OBRA 1981. Managed care is perceived by these States as an alternative to the control of utilization and expenditures through limitations on eligibility or payment. By far the most popular Medicaid managed care initiative is primary care case management (PCCM). By September 30, 1986, over half the States (32) had made 125 waiver requests for 82 different programs. Of the 62 waivers approved by HCFA, about three quarters were implemented, and over one half were still in force in late 1986 (Bell, 1987).

Detailed case studies of six PCCM programs were conducted by James Bell Associates, Inc., for HCFA under the Medicaid Program Evaluation. The programs studied -- Colorado, Kansas, Michigan, Nevada, Utah, and Wisconsin -- included one fee-for-service model, three mixed fee-for-service and capitation models, and two capitated risk sharing models that covered the range from strictly mandatory to fully voluntary enrollment and from limited to statewide implementation.

All six case study PCCMs reported savings. Net savings per beneficiary enrolled in a PCCM across the study sites ranged from $25 to $178 per year, which represented from 1 to 15 percent of what estimated Medicaid expenditures would have been for study enrollees without PCCM. Savings were occurring where intended, among recipients who would likely overuse and inappropriately use services otherwise. In addition, despite reducing utilization and expenditures in the six States, PCCM did not appear to adversely affect the quality of care. Moreover, many providers and administrators felt that increased continuity of care was a positive benefit of the program. Overall, the evaluators concluded that PCCMs

appeared to provide access to quality services with modest savings, but that designing and implementing a Medicaid case management program is a very costly and complex undertaking.

The savings reported in Medicaid PCCMs have been modest (0.6 to 5.4 percent of average total acute care costs in the six case study States) because of the high administrative costs in implementing and maintaining the program. The evaluators estimated if PCCMs were expanded to include the full target populations of the six sites, savings of 1.5 to 4.0 of total acute care expenditures might be reached. For some States this may be simply too small to warrant the additional managerial, administrative, data processing, reporting, and monitoring attention needed to implement such systems. States and other entities contemplating such systems were cautioned to be prepared to invest substantial administrative resources into planning, starting, and monitoring a new case management program, whatever its basic structure, and to expect only modest savings.

Private payers. As part of its HCFA sponsored study, the University of Pennsylvania/University of Minnesota Policy Research Center surveyed 132 different health insurance plans (Pauly et al., 1988) operated by 111 commercial health insurance carriers that are members of the Health Insurance Association of America (HIAA). Study data were collected via a supplementary questionnaire to the annual survey by HIAA; 120 of the plans responded. Overall, survey results indicate that these private carriers continue to pay for services primarily using traditional fee for service methods; 111 of the 120 plans responding to the survey indicated that they pay using usual and customary charges, and only 6 indicated that they use any type of a controlled payment method, such as discounting fees, fee schedule, or capitated methods as their most common or typical payment method.

Private payers use a variety of volume control strategies. Utilization review is the most popular method of controlling hospital use, and most companies use more than one method. For example, all reported having programs involving pre-admission certification, 109 use concurrent review, and 85 use retrospective review of inpatient care. The impact of these utilization review programs can only be roughly estimated. Only 69 companies had formally evaluated the effect of pre-admission review: of these, 56 reported that their evaluation indicated pre-admission review reduced expenditures by an average of 7 percent, 1 indicated the program increased costs, and the remainder were undecided or did not know.

Some insurers use other methods to control VI: 36 do retrospective review of outpatient care, 22 reported that they recode some claims when necessary to more accurately reflect the level of services provided (e.g., recode a new patient visit to an established patient), 15 reported bundling of physician services into broader categories than visits or procedures, such as per episode payments, and 13 provide physician profiling and feedback.

The HIAA survey also requested information regarding these insurers' preferred provider organization (PPO) business. Fifty-seven of the 132 plans indicated that they also have PPO arrangements in which they use a variety of methods to reimburse physicians. The most common form of PPO

reimbursement is discounted usual charges and fee schedules. Fifty-five of the firms responding estimated they received an average discount of about 14 percent of the physician's usual charge. Volume control methods used by these PPOs is generally limited to utilization review and benefit incentives to channel patients to cost effective providers.

Many commercial health insurers also appear to be positive about their experience with case management of health claims and believe that case management is a promising component of managed care. In addition, the survey indicated that commercial insurers felt that case management was more effective in containing costs than other cost containment methods, such as pre-admission certification, concurrent review, retrospective review, and mandatory second opinions for surgery. Another HIAA survey showed that 81 percent of all group insurance plans offer case management because of its perceived cost containment benefits (Schramm, 1988).

Volume control experience in Canada. The Canadian experience with regard to volume and expenditure control has possible implications for control of Medicare expenditures. The absolute level of Canadian health care expenditures per capita is well under that of the United States (Table 15). Nevertheless, the Canadian experience in controlling expenditures must be discussed in the context of its health care system. Since 1971 every Canadian province has paid for physician services under a comprehensive and universal health insurance program. There is only one payer for each province and fee levels for physicians' services are negotiated between provincial government health representatives and professional associations. Although each province has a unique payment system, in general terms, the medical associations determine the fee levels for each service and negotiate annual percentage increases in payments with the provincial governments. In effect, the approach is to control total expenditures through adjusting fee levels rather than attempt to directly manage or control volume. The structure varies from province to province with Quebec having the most stringent controls. The Canadian Federal Government provides strong incentives to provincial governments to control costs by providing each province with a single fixed payment to cover all services provided during the year. (See Barer et al., 1988, or Lomas et al., 1988, for additional details.)

While Canada appears to have been more successful in controlling fees and overall physician expenditures between 1970 and 1985, their VI growth has been somewhat more rapid than that for the U.S. Utilization per capita between 1970 and 1985 increased by 67.8 percent in Canada versus 49.4 percent in the U.S. From 1980 to 1985, however, utilization per capita increases in the U.S. exceeded those in Canada (13.9 percent vs. 11.1 percent).

CHAPTER 4

OPTIONS FOR CONTROLLING THE IMPACT OF VI GROWTH ON MEDICARE OUTLAYS

The research findings discussed earlier have made a significant contribution to the analysis of the VI growth by identifying where recent growth has occurred, by type and place of service, and by identifying types of procedures growing most rapidly. For example, recent growth appears to have been most rapid for surgical procedures such as cataract surgery and colonoscopies, radiological procedures, such as CT scans and magnetic resonance imaging, and for special tests such as ECGs, other cardiac tests, ophthalmoscopy, and others. Much of this growth has occurred in ambulatory settings.

As we have seen, however, the physician services market is volatile, and research completed thus far does not permit us to clearly identify specific causes of recent growth. Changes in the health care environment, such as Medicare PPS, development of PROs, rising assignment rates, increased use of outpatient surgery, and fee freezes may have contributed to recent VI growth, but VI growth is a powerful trend with many causes that has continued for many years and may be expected to continue long beyond these influences. Further, we have no information as to appropriateness of this growth or its benefit to patients. Thus, it is important to consider a wide range of options for controlling the impact of VI growth on Medicare outlays because there does not appear to be any one solution to the VI problem. This chapter examines four general types of options:

A. Aggregating payments

1. Capitation
2. Geographic capitation
3. Physician capitation
4. PPOs and other managed care arrangements
5. Bundling of physician and facility payments/physician DRGs
6. Other bundling options
7. Improved coding/definition of services

B. Incentives targeted to beneficiaries

1. Beneficiary cost sharing
2. Second surgical opinions

C. Influencing physician decisionmaking

1. Clinical guidelines and effectiveness research
2. Utilization review and coverage policy
3. Conflict of interest rules
4. Adjusting payments for services

D. Growth targets

In evaluating these options, we consider their ability to control the effect of VI growth on outlays, their administrative costs and feasibility, and their likely effect on the appropriateness of medical care, on beneficiary liability and access to care, and on physician and beneficiary behavior.

Aggregating payments. The purpose of making aggregate payment for a group of services is to encourage the provider or entity that receives the payment to provide care efficiently. There are few incentives to provide unnecessary services because, unlike fee-for-service systems, there is no additional payment for additional services.

Capitation. Historically, capitation has been the most efficient way to constrain health care costs (Luft, 1978; Manning et al., 1984). Under a capitated approach, Medicare makes a single payment in advance for all covered services for each beneficiary. In contrast to fee-for-service based payment systems, capitated systems provide incentives for providers to simultaneously control price and VI, and they create a mechanism to control Medicare outlays. Capitated systems have a number of related advantages; a reduced level of Federal regulation can be achieved, for example, because the capitated system can be assigned responsibility for payment details. Capitated systems have greater capacity to identify and correct VI related problems at the local level. Within a capitated plan, physicians have autonomy to make appropriate clinical decisions yet are more able to coordinate the total costs of care with other providers and administrators.

Previous research has shown that HMOs achieve most of the savings through lower hospital utilization. Patients enrolled in HMOs had as much as 35 percent lower rates of hospital use as compared to those enrolled in traditional fee-for-service plans (Luft, 1981; Scitovsky, 1981; Manning et al., 1984). HMOs might substitute less expensive physician care for hospital care; Luft (1981) reported that HMO enrollee use of outpatient and physician services is about 10 percent higher than enrollees in conventional plans.

In theory, capitation creates incentives for providers to underserve patients, but research has not revealed evidence that the quality of care under capitated systems is inferior to that under conventional care (e.g., Ware et al., 1987). Capitated care is successful and widespread in the United States, and the number of Medicare beneficiaries enrolled in capitated systems has doubled in the last 5 years. Nevertheless, only 3 percent of Medicare beneficiaries are enrolled in capitated systems and, even with continued strong growth, other strategies are necessary for the short and medium term.

Geographic capitation. A geographic capitation system would put an organization, such as an insurer, at risk for physicians' services provided to all Medicare beneficiaries living in a geographic area, such as a State or carrier service area. In effect, the Federal Government would buy the Medicare benefit package on behalf of all Medicare beneficiaries in an area at a fixed price from a single underwriting entity (Burney et al.,

1984). This single entity could be at full risk for any difference between the target budget and actual expenses. Competition could be encouraged by permitting beneficiaries to enroll in other capitated plans in the same area.

Under this approach, Medicare might be able to take advantage of the benefits of dealing with capitated entities without all beneficiaries enrolling in HMOs or other capitated plans. A key advantage of geographic capitation is that it could preserve traditional Medicare for beneficiaries while providing a cap on total Federal liability for the program. The capitated entity could offer Medicare beneficiaries a choice of plan options that have cost control features. A concern about geographic capitation, however, is that it might discourage competition if large insurers become even more dominant in their market. Some critics have argued that geographic underwriters would need to be regulated like utilities.

Physician capitation. Another alternative to making capitated payments for all Medicare services would be to make a capitated payment to physician groups that would cover some or all Part B services. As with total capitation, physician capitation shifts the risk of increasing VI from the Government to the physicians, thereby changing incentives.

Services covered could include all physician services or a package of selected services, such as primary care along with outpatient laboratory and x-rays. The individual primary care physician or group practice could receive a capitated payment for the primary care of each enrolled beneficiary. While the primary care physicians might also be put at risk for services performed by specialists, it would probably be difficult for individual primary care physicians to control services performed by specialists.

An advantage of physician capitation is that the total amount of risk is less than when all services are capitated because the relatively more expensive hospital costs are excluded from the capitated payment. Thus, relatively small organizations, such as modest sized group practices, could become capitated providers for some services. As is true for other capitated plans, Medicare would need to monitor access to and quality of care to ensure that necessary services are not denied.

PPOs and other managed care arrangements. A PPO is a network of providers who agree to provide health care services at lower than usual fees in exchange for expected advantages, such as prompt payment and an increased volume of patients. The savings from PPOs are generally achieved through efforts such as utilization review, hospital pre-certification, concurrent review of inpatient days, discounted fees, and directing patients to preferred providers. Specific operating procedures and program characteristics vary among PPOs and other managed care arrangements, but physicians participating in them generally agree to accept intensive utilization review, which includes the measurement of rates and patterns of services that are provided.

One method to control expenditures is to employ case management techniques as a method of controlling expenditures for especially expensive patients through directly managing use of services, offering special benefits, and directing patients to particular sources of care. Case management may be targeted, for example, to patients who have been diagnosed as having conditions associated with high costs, those recommended for a high cost surgical procedure (e.g., coronary artery bypass grafts) or those with expenditures that have already exceeded a preset limit. As discussed earlier, many State Medicaid programs have adopted managed care initiatives, including the management of primary care.

HCFA is developing a PPO demonstration involving five sites to test the feasibility of offering Medicare beneficiaries the option of receiving managed health care services on a fee-for-service basis. If successfully demonstrated, it is expected that Medicare PPOs will add to the Department's overall strategy for improving the health care system through competition and expanded beneficiary choice, while offering a means to control the increasing volume of services and associated health care expenditures. Under this demonstration, local beneficiaries in each test site will be given the option to use PPO physicians. Those that do will be encouraged to use the more cost effective PPO physicians through a variety of incentives, such as reduced out-of-pocket costs or additional services.

Bundling physician and facility payments/physician DRGs. At present, Medicare makes a separate payment for each physician's service and also makes a payment to the facility when services are provided in facilities, such as hospitals and ASCs. VI of some physicians' services might be controlled by making a single payment for all associated physician charges. This payment could be combined with the payment to the facility, or could be made separately, such as to a physician group or medical staff. There are many possibilities for developing prospective, per case payments for physician services, such as including selected services performed in inpatient or outpatient hospitals and ASCs. In general, bundled payments contain incentives for providers to reduce the use of marginal procedures and reduce the opportunity for discretionary billing of services.

There are several issues that must be addressed to implement this type of payment approach, such as determining an entity to receive and distribute the bundled payment, monitoring to determine whether the full bundle of services was provided, and deciding when and how services outside the bundle might be paid. Recently, Welch (1988) suggested that payment could be made to the medical staff in both inpatient and outpatient settings since this could create a large enough risk pool to spread financial risk and maintain quality of care.

One example of this payment approach that is already in the process of being demonstrated is to make a single payment for all services associated with selected high volume procedures. After inquiries from selected providers who were interested in this type of payment approach, Medicare

has begun implementation of a demonstration in which a single payment will be made for all services associated with coronary artery bypass surgery. A similar demonstration for services associated with cataract surgery is being designed.

Another example of a bundled payment approach would be to use DRGs to determine payments for some or all inpatient physician services. In this way, Medicare might control costs and encourage efficiency by paying an amount determined in advance for all the physician services provided during a hospital stay. This bundling approach would be conceptually similar to the current PPS for hospitals.

Services in inpatient hospitals account for about $12 billion of allowed charges which represents about 40 percent of total Part B expenditures. Further, recent data (Table 2) suggest that after a few years of relative stability, physician expenditures in inpatient hospitals may again be increasing (i.e., from 1986 to 1987 there was an increase in allowed charges in inpatient hospitals of almost 11 percent). Previous analysis has shown that DRGs could theoretically be used to determine payments for inpatient physicians' services, although there are significant administrative and implementation issues.

An alternative to including all inpatient services in the DRG type payment would be to only include selected physician services such as all surgical services or those provided by radiologists, anesthesiologists, and pathologists and assistants-at-surgery. These latter physicians are rarely selected by patients, their services are dependent upon the attending physician's orders or decision for surgery, and their care for patients ends with discharge.

Other bundling options. There are other less extensive bundling approaches that might assist Medicare to achieve cost control of some services by redefining the payment unit from a narrow procedure to a more comprehensive packaging of services. Examples might include office visit packages (Mitchell et al., 1987) in which the visit charge would include all associated ancillary services (e.g., lab tests, x-rays, ECGs). A variation of this approach to packaging office visit services would be to include only the physician's professional interpretation of the ancillary services (Bogen et al., 1988) since the physician might not actually perform the service but only interpret the results, and because some test interpretation is implied in the definitions of some of the visit codes.

Yet another bundling approach would be to include the office visit charge in the charge for some minor surgical and diagnostic procedures, such as skin lesion removals. In these instances, separate bills for visits would not be allowed unless it were clear that other significant services were provided during the visit (Bogen et al., 1988).

Improved coding/definition of services. More precise coding rules could reduce both upcoding and unbundling for some services. One area in which upcoding is of special concern is for services such as office visits, hospital visits, and consultations (OIG report, 1989). Possible solutions could be to collapse the number of codes used for payment purposes, or to incorporate time spent by the physician in providing the service.

Codes that bundle services together are easy to devise for some services such as surgery. For example, surgeons generally include in their global fee all services from the moment that the decision is made to operate until the patient has completed a normal recovery. Medicare carriers generally have rules as to the services surrounding a surgery that are included in the "global fee," but these rules vary from carrier to carrier.

INFLUENCING PATIENT BEHAVIOR

Beneficiary cost sharing. Currently, Medicare beneficiaries are responsible for the first $75 of covered services before Medicare begins to pay for service. (This "deductible" amount was set at $50 in 1966 and was raised to $60 in 1973 and $75 in 1982.) After the deductible is met, the beneficiary is responsible for 20 percent of the allowed charge per service and, for unassigned claims, any amount by which the actual charge (as limited by the MAAC) exceeds the allowed charge. The goal of cost sharing is to give beneficiaries an interest in selecting less costly providers and in questioning the necessity of services by making them more sensitive to cost.

Deductibles and coinsurance can reduce use of services and are commonly used by a wide variety of insurance plans to control costs and persuade patients to use preferred providers. The effect, however, of deductibles has decreased for Medicare as inflation has decreased the real dollar value of the deductible, and growing ownership of Medigap policies has decreased beneficiary liability for both the deductible and copayment. Recent studies (Taylor et al., 1988; McCall et al., 1989) estimate that Medicare benefits are roughly 40 percent higher for those that purchase Medigap policies because of increased VI resulting from Medigap coverage. Medigap policies may not cause the higher payments, however, because beneficiaries with high liabilities or higher risk may be more likely to purchase Medigap policies.

Because copayments reduce use of services, they could have an affect on health status in a few circumstances. For example, the Rand health insurance experiment (Keeler et al., 1985), which involved nondisabled persons under 65, showed that free care provided health care improvement in 2 of 10 health measures analyzed (hypertension and vision care). Other analyses of these data suggest a general problem: copayments reduce an individual's likelihood of seeking care, but they have no effect on the cost of care once the individual enters the health care system (Manning et al., 1988). Once individuals seek a physician's advice, their liability for copayment appears to have little impact on use of services.

Second surgical opinion programs (SSOP). Surgery accounted for about 41 percent of the total increase in physician spending over a recent 5 year period (1982-1987). In an attempt to reduce unnecessary risk to patients and control surgical spending, Medicare and many private payers and Medicaid programs use SSOPs to ensure that surgery performed is medically necessary. Another possible benefit of SSOPs is that they might also achieve savings by reducing unnecessary surgery through an indirect sentinel effect resulting from physician awareness of the program. SSOPs can be voluntary or mandatory; in the latter case beneficiaries must seek

a second opinion if they want the insurer to pay full benefits for the procedure. Medicare encourages second surgical opinions by paying for them and by maintaining hotlines through which beneficiaries can obtain names of physicians qualified to provide second or even third opinions. In addition, as required by the Consolidated Omnibus Budget Reconciliation Act of 1985 (P.L. 99-272), PROs subject at least 10 surgical procedures to pre-admission and/or pre-procedure review and can require a second opinion when appropriate.

The procedures that are the best candidates for inclusion in a SSOP are those that: (1) can be postponed without undue risk to the patient, (2) account for a significant amount of expenditures, and (3) have unclear indications as to when they are medically necessary. Attempts to measure the effectiveness of SSOPs have had mixed results because many of the costs and benefits are difficult to quantify.

INFLUENCING PHYSICIAN BEHAVIOR

Clinical guidelines and effectiveness research. Clinical guidelines and effectiveness research seek to provide physicians and others with information to assist in determining the type of care that should be rendered to a particular patient. Effectiveness research may have implications regarding what services will be covered even though the primary goal is to influence decisionmaking by providing better data.

The argument for this strategy is the shortage of consensus and hard data as to when procedures should be done. This argument is buttressed by evidence that many important procedures are done for indications that consensus panels identify as inappropriate. For example, Chassin et al. (1987), using a consensus panel's recommendations, studied appropriateness of the use of three procedures (coronary angiography, carotid endarterectomy, and upper gastrointestinal tract endoscopy) and its relationship to geographic variations in their use among the Medicare population. They found that 17 percent to 32 percent of those procedures were done without appropriate indications. The panel did not explicitly consider appropriateness recommendations for a Medicare vs. a non-Medicare population mix, and the study did not solicit information from the physician when chart documentation was inadequate.

The record of consensus development is mixed. For example, the Office of Medical Applications of Research of the National Institutes of Health has sponsored almost a hundred consensus development conferences on a variety of clinical issues. The reports of these conferences have been widely criticized as conservative, which means that they tend to articulate existing consensus rather than forging agreement where it has not existed. Although HCFA incorporates these recommendations into coverage assessments, HCFA has never changed an existing rule on coverage of medical services as the result of a consensus conference. Further, and perhaps more serious, Kosecoff et al. (1988) found little impact from these consensus conferences on actual physician practices. It should also be noted that neither guidelines based on consensus nor effectiveness research will necessarily reduce VI of services. Clinical guidelines and effectiveness research could lead to increased use of some services such as for increased use of flexible scopies for cancer screening and detection.

Utilization review and coverage policy. Utilization review depends on organizations, such as Medicare carriers, PROs, insurers, and medical societies, to change physician behavior through education, withholding payment, or other sanctions. Utilization review may operate three ways: (1) prospectively, before service is rendered, through methods such as pre-admission screening and second surgical opinions, or after service is rendered but before payment is made, (2) concurrently, through monitoring care during treatment, and (3) retrospectively, through reviews of claims and medical records, either before or after payment is made. Coverage policy is closely related to utilization review, although the administrative structures are different. Coverage policy is the method by which Medicare defines the services for which it will pay and the circumstances in which it will pay.

Utilization review that assesses the appropriateness of individual services may control some VI growth (Eisenberg, 1988). Although utilization review has been used extensively in hospital settings, recent analyses suggest that much of the savings attributed to utilization review for hospital services are achieved by a "one time" reduction in service volume, after which volume continues to rise at about the same rate as before the utilization review program (Feldstein et al., 1988). In addition, reviewing physician out-of-hospital services is substantially more laborious because of the larger number of providers, patients, and services involved, and because there is a lower average payment per claim. It might be possible to increase utilization review activities for physicians with large increases in Medicare VI, or in geographic areas where the number of procedures per beneficiary is largest.

Conflict of interest rules. There is a potential conflict of interest any time a physician's decision regarding providing or ordering a service may increase his/her profit. In a fee-for-service system, some such conflicts are inevitable, but certain situations create even more powerful conflicts. For example, conflict of interest concerns are raised by the possibility that physicians might over-prescribe drugs when they dispense them directly to patients. Conflict of interest concerns are also raised when physicians own imaging facilities or laboratories to which they refer patients. Subsequent growth in VI of those services raises inevitable suspicions in the minds of the public and Federal officials. There is little direct evidence about the actual inducements resulting from such arrangements, and consequently, as to the savings that forbidding such referrals might achieve. In areas where the physicians owned the only facilities, conflict of interest rules might even create barriers to care.

Adjusting payments for services. Some economists believe that inequitable relative payment rates might create economic incentives for physicians to inappropriately perform some services (Hsiao et al., 1988). This suggests that it might be possible to moderate volume growth of some services through selected payment adjustments based, for example, on inherent reasonableness or on recent research on relative values for physician services. Modifying relative payment amounts, however, seems unlikely to have a substantial impact on overall increases in volume. Basic fee-for-service incentives to increase billing would still be operative. Moreover, as discussed in Chapter 5, changing relative payments could

actually result in an increase in outlays if physicians who face fee reductions under a RVS-based fee schedule respond with an offsetting increase in volume.

Growth targets. Growth targets set in advance an acceptable level or rate of increase in aggregate expenditures for a given time period. A widely-discussed model would vary the annual physician fee update based on a comparison between actual and targeted program outlays in a preceding period. Growth targets can be set at the national level or at some other geographic level. Medicare could set a growth target for the year for a group of services, all physician services, all Part B services, or even all Part A and Part B services. This method would not control VI directly, but could shield Medicare trust funds from the impact of VI growth since costs to Medicare would be controlled directly through the payment per service.

The primary advantage of growth targets is that they could permit Medicare to control Part B expenditures. There are, however, a number of issues regarding growth targets:

1. Incentives on individual physicians. In effect, a growth target holds each physician in the region for which the target is set responsible for the collective decisions of all physicians in the region. There is, however, little incentive for individual physicians to limit their VI increases because an individual physician's effect on collective expenditures is so minimal.

Growth targets, however, are intended to create a collective incentive to encourage the medical community to work cooperatively with the Medicare program to identify and correct problems related to unnecessary care. A variety of collective responses would be encouraged. One response would be the participation of organized medicine in the development and dissemination of practice guidelines and other educational efforts. Another response would be greater involvement of local physicians with PRO and carrier activities. The Federal Government could facilitate these efforts through increased support of research and education concerning the effectiveness of medical therapies, and through a commitment to improve PRO and carrier systems. A growth target might also encourage the medical community to take a more positive approach toward development of policies, such as bundling and managed care, that would have a more direct effect on utilization. Clearly, physicians would need to develop new relationships with one another for this method of expenditure control to be equitable to all physicians. A careful balance is needed between arrangements that control VI and arrangements that conflict with current anti-trust standards.

One method to establish a more direct linkage between the collective incentives of the growth target and the practice patterns of individual physicians is to establish an "opt-out" for qualified physician groups. Under this policy, a physician group (such as a PPO or a hospital medical staff) could opt-out of the general growth target. Such a group would then receive a fee update based on the cost performance of the group in relation to the target rate. This would provide incentives for physician groups to be organized to provide care in a cost-effective manner.

2. Access for beneficiaries. An important issue is whether Medicare beneficiaries would be able to continue to have access to needed services, with or without increases in out-of-pocket costs. If physicians continue to accept assignment at current levels, the financial impact on beneficiaries may be minimal or may even be beneficial since growth targets could help constrain increases in copayments. Another issue is whether all physicians would continue to provide care to all Medicare beneficiaries under a growth target system. Some suggest that the Canadian experience with growth targets provides evidence that physicians would continue to provide care under such a system. Canada has an all payer system, however, so almost all physicians who wish to practice medicine must participate.

The principal risk in the United States is that a Medicare-only growth target could lead to a progressive disparity between Medicare and private insurance payment levels. Under a "worst case" scenario, fee levels would be progressively reduced if volume failed to slow in response to the growth target and associated policies. Even in this case, however, the decrease in Medicare payments relative to private insurance payments would occur slowly and not amount to more than a few percentage points until several years had passed. A program of ongoing monitoring of beneficiary access to care could protect Medicare beneficiaries and, in addition, provide market-based data on which to base further refinements of Medicare payments for physician services.

3. Effects across geographic areas and specialties. The research findings discussed earlier showed that expenditure levels vary by geographic area and grow at varying rates. Areas with low volume growth might have their fees held down as a result of rapid increases in volume in other areas. Thus, the methodology for determining growth targets might need to account for justifiable differences in expenditure levels and increases between local areas. Similar concerns have been raised about differences in expenditure levels and growth rates for different services and specialties. A national growth target would not deal with these differences. In addition, if growth targets were implemented for areas smaller than the entire country, a policy would be needed to account for care received by patients who live in areas different from the area where the physician provides the service. This could especially be important for rural areas where patients might need to leave the area to receive specialized care by referral.

4. Using targets to set payments. The implementation of payment levels based partially on growth target performance would depend upon the accuracy of historic expenditure data and the time lag incurred before reasonably complete data were available to determine current expenditures and project future expenditures. Medicare could recapture expenditures exceeding the pre-determined target in one of two ways. One method would recapture excess expenditures by lowering the payment amount for services in the next time period. As already noted, some Canadian provinces employ this type of system for physician payments. An alternative approach would be to withhold a percentage of the payment until the end of the time period when actual expenditures could be compared to the target amount. If expenditures exceed the target, the withheld amount could be reduced by

the excess expenditure amount before being distributed to physicians, e.g., paying all fees at 95 percent throughout the time period with a later payment based on variance from the target.

Although growth targets raise policy issues, they, in fact, do not reflect a major change from recent policy experience whereby the Medicare annual payment update has been reduced to partially offset large expenditure increases. A growth target has one potential advantage compared with this de facto policy. Ad hoc freezes and cuts in response to budget pressures do not create an incentive or framework to facilitate a constructive response to the volume issue within the medical community.

In summary, a variety of design questions would need to be addressed to develop a growth target policy. These include: (i) the range of services to be included in the target, (ii) whether the target should apply at a national, statewide, or sub-state basis, (iii) what factors should be used to establish and update the target, (iv) the nature of the fee adjustment that would result if the target is exceeded, (v) whether there should be a withhold from current year payments or an adjustment in fee levels in the subsequent year after the end of the target period, and (vi) whether there should be an opt-out for qualified physician groups, and if so, what the terms of the policy should be.

CHAPTER 5

Impact of RBRVS on VI

In this chapter we consider possible impacts of a RBRVS-based payment. As discussed earlier, for years economists have inconclusively debated whether growth in VI was driven predominantly by physician inducement or by patient demand. This debate has usually focused on issues, such as whether physicians seek to attain a target income and whether physicians can induce demand for their services. This debate has important implications for the implementation of an RBRVS, such as the one being developed by Hsiao (1988) and other researchers at Harvard University under a cooperative agreement with HCFA. It is clear from preliminary analyses that most RBRVS-based payment schemes implemented in a budget neutral fashion would substantially alter payments for a significant number of services, generally increasing payments for visits and decreasing payments for many surgical procedures. Under many scenarios, these payment changes could be substantially greater than any previous payment change implemented by the Medicare program.

Studies that examined physicians' responses to payment changes were reviewed to determine possible implications for impacts that might occur under a RBRVS payment system. Two prior empirical studies that examined physician responses to absolute payment changes in the Medicare program reported significant volume changes in response to payment restraints or reductions. Researchers at Urban Institute (Holahan and Scanlon, 1979) studied physician reactions to wage and price controls that lasted from 1971 to 1974. Even though prices for individual services were limited to a 2.5 percent annual increase during this period, expenditures increased from 10 to 13 percent per year because of substantial increases in the VI of services provided.

Rice (1984) examined physician responses to an administrative change by the carrier for Colorado in which all physicians in the State, within specialty, were combined into a single statewide locality for purposes of computing prevailing charges (previously, the carrier recognized 10 different geographic areas in the State for payment purposes). The effect of this administrative change was to increase payments for rural physicians and slightly decrease those for urban physicians. Study findings indicated that physicians receiving the lower payments provided more intensive office and hospital visit services and increased the volume of surgery and lab services.

In a review of Canadian efforts to control expenditures, Barer et al. (1988) and Lomas et al. (1988) demonstrate a strong relationship between fee levels and service volume. Although growth in expenditures for physicians' services has been much lower in Canada than in the U.S., utilization growth, which is even higher than in the U.S., has somewhat offset lower growth in payments per service.

Other investigators report that they believe the evidence for demand inducement is more complex. Feldman and Sloan (1988), for example, suggest that physician response is more likely to involve changes in mix or quality of service rather than inducement for additional services. Mark Pauly (1988) reported that, in theory, physician response to payment

changes is partly dependent upon physician motivation for practicing medicine, such as whether a physician attempts to maximize profits or act as a patient advocate regardless of economic consequences. (See Appendix C for a summary of behavioral models.)

Based on these research findings that studied more limited payment changes, and Medicare program experience, however, it seems clear that physicians can induce services or alter billing patterns to at least partially offset income losses from limitations on payments for individual services. It is not clear, however, how physicians can or will respond to payments based on an RBRVS. After examining the evidence on physician responses to payment changes, Pauly (1988) concluded that the effects of an RBRVS on volume of services are unpredictable and that the physicians' response is likely to depend on their ability to induce demand for their services. More recently, HCFA requested opinions from a number of health economists as to the probable responses of physicians to payment changes resulting from an RBRVS. The overall view was that the changes are not predictable and there was substantial variation in the best guesses of the authors. Response is likely to depend not only on physicians' ability to recoup losses by inducing volume, but also on many other factors, such as ability to substitute other services, the amount of discretion the physician has as to billing for services, the degree of physician dependence on income from Medicare, ability to recapture Medicare losses from non-Medicare patients, and whether other payers also adopt payment schedules based on RBRVS. An example may clarify this point:

Ophthalmologists and thoracic surgeons appear likely to receive sharply lower payments under an RBRVS. Both specialties receive 42-43 percent of their income from Medicare beneficiaries, compared to 21-22 percent for the average general or family practitioner (Paxton, 1987). Thus, it is likely that both ophthalmologists and thoracic surgeons would find it difficult and costly to stop treating Medicare beneficiaries. Their ability to increase their volume of services, however, may differ. Ophthalmologists provide a substantial amount of routine primary eye care for patients; it might be feasible, therefore, for ophthalmologists to identify new candidates for cataract surgery and lens implantation, which is the procedure from which they receive most income, and to offer the procedure to their patients. By contrast, thoracic surgeons provide little primary care and are heavily dependent on referrals from nonsurgeons and especially from cardiologists; thus, it might be far more difficult for thoracic surgeons to induce demand for their services.

As an alternative to inducing demand for services to Medicare patients, some physicians might attempt to recoup losses by not accepting assignment. Another alternative might be to provide fewer services to Medicare patients if payments for those services dropped. But even decreased payments under an RBRVS would still provide substantial take-home income to affected specialties, so they would be likely to decrease their services to Medicare patients only if they could treat some other group who paid more. The ability of specialists to do this is likely to depend on payment levels from other insurers. If other payers were to adopt the fee schedules that Medicare developed from an RBRVS, physicians might not be able to decrease services to Medicare patients.

Finally, it is important to realize that we have focused on the induction of demand in response to decreased payments. The other side of the coin is that physicians might be more willing to provide those services for which payments increased. For example, a number of advocates of the RBRVS have argued that it would increase the incentives to provide "cognitive" services. There is, however, almost no direct evidence on whether increased payments result in increased or decreased volume of services.

Given that we do not know whether the most affected specialties will be able to induce demand for their services, that we cannot predict the responses of other insurers, and that the contemplated changes are very different from those for which we have historical evidence, projections of physician response to an RBRVS are uncertain. Nevertheless, this response is important for two reasons:

- Budget impacts would need to be assessed if an RBRVS were adopted as a basis for payment. An RBRVS could be implemented in a budget neutral manner so it would not increase expenditures or could be implemented to achieve savings. Budget neutrality would require a prediction of how great a volume of services will be provided, and this volume depends, in turn, on how much physicians increase their volume of services to recoup reduced payments. Thus, the more induced demand is assumed, the lower the payments will be to all physicians. In turn, if we assume induced demand, we find that the impact of an RBRVS on Medicare revenues by specialty decreases. In Table 16, we show the effects on specialty income of responses by physicians that recoup differing percentages of the loss that an RBRVS might cause. To project the impact of payment changes in the past, both HCFA actuaries and the Congressional Budget Office have assumed that physicians would attempt to recoup lost income.

- If there is a substantial induction of demand by physicians in response to decreased payments, Medicare's problems with VI growth might become appreciably worse.

In summary, the effects of an RBRVS on VI of physician services are not predictable. Although most analysts believe that there would be some short-term increase in VI from physicians who suffered a net reduction in Medicare payments, there is no agreement as to whether this decrease would be large or small. There is also no consensus as to the probable behaviorial response of physicians who experienced a net increase in Medicare payments; it seems unlikely, however, that these physicians would sharply reduce their level of services. Thus, it seems likely that the increased VI for physicians that have a net loss in Medicare revenues would be greater that a reduction in VI that might occur for physicians that gain additional Medicare revenues.

Because of this uncertainty as to behaviorial response, the most prudent approach to implementing an RBRVS might be to adopt a growth target that would enable Medicare to take care of any behaviorial response as it took place. A growth target would also take account of features of implementation that could not be made precisely budget neutral, such as changes in global fee definitions and changes in geographic areas used for payment determinations.

References

AMA: Physician Characteristics and Distribution in the U.S., Chicago, American Medical Association, 1986.

AMA: Physician Supply and Utilization by Specialty: Trends and Projections. Chicago, American Medical Association, 1988.

AMA: Summary of Proceeding of Leonard Davis Institute/American Medical Association Workshop on Medicare Part B Volume. Workshop held on November 29, 1988 at Leonard Davis Institute. American Medical Association, Chicago, January, 1989.

Barer, M., Evans, R., and Labelle, R.: Fee Controls as Cost Control: Tales From the Frozen North. The Milibanks Quarterly. 66(1):1-104, 1988.

Bell J., Beynan, L. McCanna, M. and Beck, S.K.: Primary Care Case Management in Medicaid: Findings from Six Case Studies. Medicaid Program Evaluation Working Paper 4.5. HCFA, Office of Research and Demonstrations, Baltimore, Md., March 1987.

Bogen, J., Boutwell, R., and Mitchell, J.: Packaging Diagnostic Test Interpretation and Surgical Procedures with Office Visits. Preliminary Report. November 1988.

Burney, I., Hickman, P., Paradise, J., and Schieber, G.,: Medicare Physician Payment, Participation and Reform. Health Affairs, Winter 1984

Cafferata, G.L.: Private Health Insurance Coverage of the Medicare Population National Health Care Expenditures Study. Data Preview 18. DHHS Publication No.(PHS)84-3362. National Center for Health Services Research, Public Health Service. Washington. U.S. Government Printing Office Sept. 1984.

Chassin, M., Kosecoff, J, and Winslow, M., et al.: Does Inappropriate Use Explain Georgraphic Variations in the Use of the Health Care Services? JAMA 258(18):2533-2570, Nov. 13, 1987.

CHER: Impact of the Medicare Fee Freeze on Physician Expenditures and Volumes. Final Report for Cooperative Agreement No. 17-C-98758/1-03 from the Health Care Financing Administration, Center for Health Economics Research, Needham, Massachusetts, December, 1988.

CRS: Growth in the Volume of Medicare Physician Services: A Framework for Analysis. Report to Congress. Congressional Research Service, The Library of Congress, 88-466 EPW. Washington, D.C., June 28, 1988.

Cromwell, J., and Mitchell, J.: Physician Induced Demand for Surgery. Journal of Health Economics, 5:293-314, 1986.

Eisenberg, J.M.: Doctors' Decisions and the Cost of Medical Care. Health Administration Press, Chicago. May, 1988

Eddy, D., and Billings, J.: The Quality of Medical Evidence: Implications for Quality of Care. Health Affairs P.19-32, Spring, 1988.

Fisher, C.R.: Trends in Medicare Enrollee Use of Physician and Supplier Services. Health Care Financing Review, Fall 1988.

Feldman, R., and Sloan F.: Competition Among Physicians, Revisted. Journal of Health Politics, Policy and Law. 13 (2):239-261, Summer 1988.

Feldstein, P., Wickizer, T., and Wheeler, J.: The Effects of Utilization Review Program on Health Care Use and Expenditures. New England Journal of Medicine. 318(20) 1310-1314. May 19, 1988.

Garfinkel, S., and Corder, L.: Supplemental Health Insurance Coverage Among Aged Medicare Beneficiaries. Series B, Report No.5. National Medical Care Utilization and Expenditure Survey, Health Care Financing Administration and National Center for Health Statistics, 1985.

Holahan, J., and Scanlon, W.: Physician Pricing in California: Price Controls, Physicians' Fees, and Physicians' Incomes from Medicare and Medicaid. Health Care Financing Contract and Grants Report, Health Care Financing Administration, H.E.W. Pub. No. (HCFA) 03006, Washington, D.C. 1979.

HHS: Report of the Task Force on Medical Liability and Malpractice. Department of Health and Human Services, Washington, D.C., August, 1987a.

HHS: Report to Congress: Paying Physicians: Choices for Medicare. U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Research and Demonstrations. Publication No. 03264. U.S. Government Printing Office, Washington, D.C. 20402. September 1987b.

Hsiao, W., Braun, P., Becker, E., et al.: The Resource-Based Relative Value Scale: Toward the Development of an Alternative Physician Payment System. JAMA, 258(6) 799-802. August 14, 1987.

Hsiao, W., Braun, P., Becker, E., et al.: A National Study of Resource-Based Relative Value Scales for Physician Services. Final report: Cooperative Agreement No. 17-C-98795/1-03 Presented to the Health Care Financing Administration. September 27, 1988.

Keeler, E., Brook, R., Goldberg, G., et al.: How Free Care Reduced Hypertension of Participants in the Rand Health Insurance Experiment. R-3326-HHS, The Rand Corporation, Santa Monica, California, October, 1985.

Kosecoff, J., Chassin, M., Fink, A., et al.: Obtaining Clinical Data on the Appropriateness of Medical Care in Community Practice. JAMA 258(18) 2538-2547, November 13, 1987.

Lomas, J., Fooks, C., and Rice, T., et al.: Minding our P's and Q's: Simultaneous Control of the Price and Quantity of Physician Services in Canada. Center for Health Economics and Policy Analysis, McMaster University, Department of Health Policy and Administration, submitted for publication, 1988.

Luft, H., How Do Health-Maintenance Organizations Achieve Their Savings? Rhetoric and Evidence, New England Journal of Medicine 298:1336-43, 1978.

Mandex: Changes in Medicare Part B Physician Charges: Final Report. Health and Human Services Contract No. 100-85-0053. Mandex, Inc., Springfield, Virginia, October 1988

Manning, W., Leibowitz, A., Goldberg, G. A., et al.: A Controlled Trial on the Effect of a Prepaid Group Practice on Use of Services, New England Journal of Medicine. 310:1505-1510; 1984.

Manning, W., Newhouse, J., Duan, N., et al.: Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment. The Rand Corporation. Santa Monica, California, 4-3476-HHS, February, 1988.

Mitchell, J., Calore, K., and Cromwell, J. et al.: Alternative Methods of Describing Physician Services Performed and Billed. Grant No. 500-81-0054. Prepared for the Health Care Financing Administration. Chestnut Hill, Mass. Center for Health Economics Research, May 1984.

Mitchell, J., Cromwell, J., Calore, K., and Stason, W.: Packaging Physician Services: Alternative Approaches to Medicare Part B Reimbursement. Inquiry 24:324-343, Winter 1987.

Mitchell, J., Cromwell, J., Rosenbach, M., et al.: Using Relative Physician Effort to Identify Mispriced Procedures. Final report. HHS Contract No. 100-86-0023. Prepared for Assistant Secretary for Planning and Evaluation. Washington, D.C., Health Economics Research, Inc., September, 1988.

Mitchell, J.B., Schurman, R., and Cromwell, J: The Changing Nature of Physicians' Office Visits. Health Services Research 23(4):567-591, Health Services Research, October, 1988.

McCall, N., Rice, T., Boismier, J., and West, R.,: Is There Insurance-Induced Demand for Medical Care Services? Evidence from the Medicare Population. February 1989 (Draft).

OIG: Problems with Coding of Physician's Services: Medicare Part B. Office of Inspector General, Department of Health and Human Services, Washington, D.C., January, 1989.

Pauly, M.: Efficiency, Incentives and Reimbursement for Health Care: Inquiry, Vol. March 1970.

Pauly, M.: Technical Report: Impact of the Resource-Based Relative Value Scale on the Volume and Intensity of Physician Services. Contract No. 99-C-99169/5-01. Prepared for the Health Care Financing Administration. Leonard Davis Institute of Health Economics. University of Pennsylvania, Dec. 21, 1988.

Pauly, M., Eisenberg, J., and Feldman, R., et al.: Issues Related to the Volume and Intensity of Physician Services. Contract No. 99-C-99169/5-01. Prepared for the Health Care Financing Administration. Leonard Davis Institute of Health Economics. University of Pennsylvania. Division of Health Services Research and Policy. University of Minnesota, Dec. 21, 1988.

Paxton, H.: How Much Cheer do Third Parties Bring You? Medical Economics, 108-123, December 21, 1987.

Rice, T.: The Impact of Changing Medicare Reimbursement Rates on Physician-Induced Demand. Medical Care 21(8):803-815, 1983

Rice, T.: Determinants of Physician Assignment Rates: An Analysis by Type of Service. Discussion Paper No. 82-2, Health Policy Research Series, SRI International, Menlo Park, Calif., Oct. 1982a.

Rice, T: Physician-Induced Demand for Medical Care: New Evidence from the Medicare Program. Advances in Health Economics and Health Services Research 5129-160, 1984.

Rice, T., and McCall, N.: Changes in Medicare Reimbursement in Colorado: Impact on Physicians' Economic Behavior. Health Care Financing Review 3(4):67-86, Office of Research and Demonstrations, Health Care Financing Administration. Washington, D.C., U.S. Government Printing Office, HHS Publication, HCFA Pub. No. 03143, June 1982b.

Schramm, C.: Case Management: A Promising Tool to Control Costs. Health Week 2(25) Managed Care Outlook section, page 8, December 12, 1988.

Scitovsky, A.: The Use of Medical Services Under Prepaid and Fee for Service Group Practice, Social Science Medicine 15C:107-116; 1981.

Taylor, A., Farley, S., Horgan, C.: Medigap insurance: Friend or Foe in Reducing Medicare Deficits. In Health Care in America: The Political Economy of Hospitals and Health Insurance, H.E. French III, Ed., San Francisco: Pacific Research Institute for Public Policy, 1988, as cited in Pauly, M., Eisenberg, J. Feldman, R., et al., 1988.

Trustee's Report: Annual Report of the Board of Trustees of the Federal Supplementary Medical Insurance Trust Fund. Washington, D.C., March 30, 1987.

Ware, Jr., J.E., Brook, R.H., Rogers, W.H., et al.: Health Outcomes for Adults in Prepaid and Fee-for Service Systems of Care: Results from the Health Insurance Experiment, The Rand Corporation, R-3459-HHS, Oct. 1987.

Welch, W.: Prospective Payment to Medical Staffs: A Way to Control Medicare Physician Expenditures. Working Paper 2218-01, Urban Institute September 1988.

APPENDIX A

HOW MEDICARE DETERMINES PHYSICIAN PAYMENTS

Medicare currently pays for physician services on a fee-for-service basis known as the customary, prevailing, and reasonable charge system. Medicare annually pays about 400 million claims for physicians' services to about 500,000 different physicians for over 7,000 different service codes. Under this system, payment is based on the charge that Medicare deems reasonable for the service. Medicare's reasonable or allowed charge for a service provided is the lowest of the actual charge submitted by the physician, the physician's customary charge (the physician's median charge for the service), or the prevailing charge in the locality (75th percentile of charges for all physicians in the area providing the service).

Since Medicare began, a large number of limits and other adjustments have been implemented that modify this basic approach for determining payments. For example, as a result of rapidly rising fees, Congress in 1972 limited increases in Medicare prevailing charges to a Medicare Economic Index, which reflects increases in physicians' office practice costs and earnings in the general economy (P.L. 92-603) and, in the Omnibus Budget Reconciliation Act of 1987 (P.L. 100-203), Congress implemented payment reductions on 11 selected surgical procedures.

If the beneficiary receives a service from a physician who accepts Medicare's reasonable charge as payment in full, the beneficiary can "assign" Medicare's payment to the physician. In this case, if the physician wishes to "balance bill," i.e., receive a payment greater than the Medicare allowed charge, then the physician must bill the patient for the entire amount. For these "unassigned" services, the beneficiary is reimbursed on the basis of the reasonable charge by the Medicare program.

Physicians can participate in the Medicare program in two ways. They can become "participating physicians" whereby they agree to accept assignment for all services rendered, or they can be "nonparticipating" whereby they have the flexibility to accept assignment on a claim-by-claim basis. In either case, the beneficiary is responsible to the physician for the $75 annual deductible and for 20 percent of the reasonable charge as a copayment.

Except for the fee freeze period when Medicare actual charges for nonparticipating physicians were frozen at levels in effect during the April-June 1984 quarter of 1984, there have not been any limits on the amount physicians could actually charge beneficiaries until the recent implementation of the maximum allowable actual charge (MAAC) for nonparticipating physicians. Since January 1, 1987, a MAAC is computed for each service provided by each nonparticipating physician and is updated annually.

APPENDIX B

MEDICARE PROGRAM PHYSICIAN PAYMENT CONTROLS ON VOLUME AND INTENSITY

Overview. Medicare law specifies that payment will only be made for items and services that are reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functions of a malformed body member. The law further assigns responsibility to carriers to assure that this requirement is executed. The process by which carriers perform this responsibility is referred to as medical review. Medical review is conducted by carriers on both a prepayment and postpayment basis; until recently the law did not provide for preprocedure review. Peer Review Organizations are beginning to conduct preprocedure review of a limited number of prepayment review surgical procedures.

Prepayment Review. Prepayment review is procedure oriented; i.e., claims for selected services exceeding a pre-established frequency threshold are suspended from the claims process for intensified review. This is accomplished through the use of computer edits (medical review screens) that identify preselected procedures and suspend claims that exceed the established normative frequency for a defined time period (medical review parameters). The Health Care Financing Administration (HCFA) currently mandates 13 prepayment screens that must be utilized by all carriers. The screens account for approximately 20 percent of medical necessity denials. Carriers are free to use additional cost-effective local screens. National screens are refined on an ongoing basis, based on analysis of continuing effectiveness.

In addition to volume controls achieved by the use of frequency screens, a number of screens, primarily in the area of visits, address intensity. Examples, of currently mandated volume and intensity screens that are illustrative of these different approaches include:

- Volume screen - Chiropractic treatments in excess of 12 per year. Medical review will result in either payment or denial of the claims.

- Intensity screen - Comprehensive office visits in excess of one in 180 days. Medical review may result in reduction to an intermediate, extended or other lower level of service.

Claims that are identified for prepayment review are manually adjudicated against medical policy that is developed by the carrier medical director, in consultation with appropriate medical professionals. Depending on the degree of complexity, the determination on each claim may be made by extensively trained claims personnel, nurses or physicians.

The results of this process are cost effective. Carriers spent $70 million to conduct medical review in FY 1988, of which $56 million was expended to conduct approximately 57 million prepayment reviews. Data from the HCFA Carrier Reasonable Charge and Denial Activity Report reveal that approximately 65 million, or 17.2 percent of claims processed in FY 1988 were initially denied either in part or in total. Of the $7.3 billion disallowed from these denials and reductions, noncovered and not

medically necessary services accounted for 33 percent of the disallowed dollars. In FY 89 carriers will conduct prepayment review on 20 percent of Part B claims submitted for payment, or approximately 80 million reviews.

Post-Payment Review. In addition to prepayment review, carriers conduct provider oriented reviews on a post-payment basis. The post-payment process focuses on individual providers by selecting them for intensified review through a variety of techniques, such as comparing their practice patterns for frequently rendered procedures to those of their peers. Providers are also identified for review based on information from a variety of sources; e.g., beneficiary complaints, referrals from other carrier departments (quality assurance, claims, professional relations), and the Office of the Inspector General (OIG).

The post-payment process requires the carrier to select a sample of claims for each provider identified for post-payment review. Historically, approximately 3 percent of providers were selected annually for review. In FY 1988 this equated to approximately 20,000 providers. Medical records are then reviewed to determine if overutilization abuse, or fraud can be established as a preliminary finding. Depending on the outcome, which includes an opportunity for the provider to discuss review findings with the carrier medical director, a host of progressively severe administrative actions may be initiated. An educational contact is generally the first step in this process. Additional options available, depending on case findings, include establishment and collection of overpayments, placing the individual provider on prepayment review for all or a portion of his practice, or referral to the OIG for civil or criminal action, which may lead to potential suspension or exclusion from participation in the Medicare program. Carriers refer approximately 400 cases annually to the OIG.

Both HCFA and the carriers regard the post-payment process as an effective deterrent to overutilization, despite the fact that demonstrating a high cost-benefit has been difficult. In terms of cost, reviewing a post-payment case, which consists of a sample of claims for at least 15 beneficiaries over a 6-month period, is expensive in contrast to prepayment review, where the unit of review is a claim. In terms of benefits, carriers agree that only some of the total effect of post-payment have been quantified, causing the full value to be understated. Benefits of post-payment review that result in avoided costs include:

- Provides leads for new cost effective prepayment screens.
- Enables the carrier to place individual providers on prepayment review.
- Provides a sentinel effect in the provider community.
- Educates providers who do not understand the program, thus leading to reduced inappropriate billings.
- Protects beneficiaries from unnecessary care.
- Detects provider fraud and abuse.

Using current techniques that measure only actual savings, carrier quarterly reports indicate that post-payment review saves $1-2 in program dollars for each administrative dollar expended. In view of the above cited benefits, HCFA is supportive of post-payment review and is taking a number of steps to both improve the process as well as to better demonstrate its effectiveness: (1) Carriers implemented a more focused case selection process on October 1, 1988. Pilot testing of this process at seven carriers during FY 88 resulted in five fold increases in identified overpayments as well as referrals of potential fraud and abuse cases. (2) HCFA is pilot testing on a post-payment basis some of the new tools and technologies of medical review (e.g., ICD-9-CM coding of diagnosis, uniform physician identifiers, and the Common Working File). (3) HCFA is developing a communications network between carrier medical directors to enable them to share timely information on local program vulnerabilities, as well as to share effective approaches to deal with these problems. (4) HCFA is attempting to develop analytical techniques to measure the deterrent effect of post-payment review. In the interim, in further recognition of the indirect benefits of the post-payment process, HCFA increased carrier's post-payment review funding by $15 million for FY 89. Of approximately $95 million that carriers will spend on medical review, about 30 percent, or $28.3 million will be spent on post-payment review.

Cost Effectiveness. Overall cost effectiveness of medical review continues to result in approximately $10 in program cost savings for each administrative dollar expended (see Table B-1). These data, which reflect medical review savings net of reversals upon appeal, are reported quarterly by all carriers on the Quarterly Carrier Medical Review Report, as required by HCFA. The report provides detailed data on the effectiveness of each HCFA mandated screen, local carrier screens, as well as post-payment and program integrity activities.

Beyond the traditional program, and new review approaches that will emerge as a result of the new tools and technologies of medical review, new initiatives are under consideration that will require legislative changes. An example of an initiative that would require statutory authority would be to hold the ordering or referring physician liable for medically unnecessary services provided. Also, Peer Review Organizations will soon begin a number of pilot projects in the ambulatory setting, aimed both at improving quality of care as well as controlling utilization. These efforts, which were requested by Congress, will be reported on in more detail in the future.

Table B-1

Medicare Carrier Medical Review Costs/Savings

	1984	1985	1986	1987	1988
Costs ($ millions)	36.3	46.4	59.9	64.9	70.1
Savings ($ millions)	355.2	465.4	550.9	684.1	678.1
Cost Effectiveness Ratio	9.8	10.0	9.2	10.5	9.7

Source: Health Care Financing Administration, Bureau of Program Operations

Carrier Quarterly Medical Review Reports, (1984-1988)

APPENDIX C

MODELS OF PHYSICIAN BEHAVIOR

A considerable controversy surrounds the question of whether growth in volume and intensity results from physicians making choices in order to increase their income. Pauly et al. (1988) have summarized three alternative behavioral models that illustrate how expected responses to payment changes are at least partially dependent upon what assumptions are made about physician motivation:

- Profit maximization. Under a simple profit maximization model, the physician is alleged to function as any other small businessman; the physician's strategy, within the limits of ethical behavior, is to maximize profits. Under this simplified view of physician behavior, physicians would provide services until payments are lower than the cost of providing the service. Thus, payment decreases would likely reduce volume, or have no effect at all on volume, if the services being reduced are still profitable. Conversely, payment increases would likely increase volume if the service became profitable for additional physicians. This model is clearly limited because the amount of services physicians could provide would ultimately be limited by patient demand or willingness to accept the services.

- Target income model. The basic idea behind target income modelsis that physicians have some fixed range of income that they seek to maintain. Under this model, physician willingness to induce additional services is at least partially counterbalanced by ethical consideration as to appropriate patient care, in contrast to the profit maximization model in which the physician incentive is to achieve the highest income possible. Thus, for example, physicians who expect to have their income reduced beyond the desired range because of price reductions or other payment reductions might become increasingly willing to modify the volume or intensity of their services, dependent on the expected effect of the payment reduction on total income.

- Patient agency model. In this noneconomic model, physicians are thought to serve as their patient's agent in the sense that decisions as to service volume and intensity are solely dependent upon what the physician perceives as being in the patient's best interest (Eisenberg, 1988). Variations of this model include the physician as a clinical agent with a primary concern for patient health status and other modifications of this basic approach in which the physician also considers the patient's economic interests and other preferences. Under this model, service volume or other practice changes might not be effected by payment changes, especially if the economic status of the patient is not changed.

Table 1

COMPONENTS OF INCREASES IN TOTAL RECOGNIZED CHARGES PER ENROLLEE FOR PHYSICIAN SERVICES: HISTORICAL
(In percent)

Year ending June 30,	Increase due to price changes		Residual factors	Total increase in recognized charges per enrollee
	Increase in physician fee component of CPI	Net increase in reasonable charges		
Aged:				
1967	7.6			
1968	5.9	4.8	10.6	15.9
1969	6.2	4.7	5.9	10.8
1970	6.7	3.9	0.6	4.5
1971	7.5	4.5	0.3	4.8
1972	5.2	3.9	2.0	6.0
1973	2.6	2.0	5.0	7.1
1974	5.0	3.2	5.4	8.8
1975	12.8	8.9	3.6	12.8
1976	11.4	8.2	3.5	12.0
1977	10.2	9.0	3.3	12.6
1978	8.9	9.0	4.3	13.7
1979	8.6	7.8	3.6	11.7
1980	11.5	8.6	7.6	16.8
1981	11.1	7.7	8.3	16.6
1982	9.9	10.8	5.6	17.0
1983	8.2	8.9	9.6	19.4
1984	7.5	7.2	4.2	11.7
1985	6.0	0.8	2.5	3.3
1986	6.7	0.0	10.9	10.9
Disabled (excluding ESRD):				
1974	5.0			
1975	12.8	8.9	14.4	24.6
1976	11.4	8.2	7.6	16.4
1977	10.2	9.0	6.1	15.6
1978	8.9	9.0	5.5	15.0
1979	8.6	7.8	8.8	17.3
1980	11.5	8.6	9.1	18.5
1981	11.1	7.7	8.4	16.7
1982	9.9	10.7	5.4	16.7
1983	8.2	8.9	12.9	23.0
1984	7.5	7.2	1.5	8.8
1985	6.0	0.8	1.8	2.6
1986	6.7	0.0	5.6	5.6

Source: HCFA/OACT

Table 2

Medicare amount of allowed charges and percent distribution of allowed charges for physician services by type and place of service: Calendar years 1982 to 1987

Type and place of service	1987		1986		1985		1984		1983		1982	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
	Dollars in millions											
Total	$26,604.4	100.0%	$22,947.7	100.0%	$20,994.4	100.0%	$19,221.4	100.0%	$17,605.9	100.0%	$15,139.3	100.0%
Medical care	9,075.1	34.1	7,872.2	34.3	7,460.3	35.5	6,999.1	36.4	6,675.8	37.9	5,969.0	39.4
Office	4,376.4	16.4	3,727.5	16.2	3,456.3	16.5	3,053.0	15.9	2,738.7	15.6	2,403.7	15.9
Inpatient	3,575.9	13.4	3,247.1	14.1	3,206.8	15.3	3,269.7	17.0	3,368.4	19.1	3,044.3	20.1
Outpatient hospital	556.9	2.1	493.5	2.2	359.3	1.7	297.4	1.5	238.4	1.4	222.9	1.5
Other	565.9	2.1	404.1	1.8	437.9	2.1	379.0	2.0	330.3	1.9	298.1	2.0
Surgical	9,165.3	34.5	7,986.0	34.8	7,156.2	34.1	6,472.5	33.7	5,709.5	32.4	4,781.3	31.6
Office	1,441.6	5.4	1,241.0	5.4	1,088.2	5.2	878.2	4.6	738.3	4.2	601.2	4.0
Inpatient	5,046.9	19.0	4,551.5	19.8	4,463.4	21.3	4,801.1	25.0	4,546.6	25.8	3,919.2	25.9
Outpatient hospital	2,550.7	9.6	2,096.4	9.1	1,526.7	7.3	735.7	3.8	382.1	2.2	228.2	1.5
Other	126.1	0.5	97.1	0.4	77.9	0.4	57.5	0.3	42.5	0.2	32.7	0.2
Consultation	1,141.9	4.3	818.1	3.6	699.4	3.3	659.4	3.4	595.6	3.4	502.1	3.3
Office	292.0	1.1	175.5	0.8	148.1	0.7	121.9	0.6	104.1	0.6	85.1	0.6
Inpatient	778.2	2.9	603.1	2.6	519.4	2.5	509.4	2.7	468.1	2.7	398.0	2.6
Outpatient hospital	46.3	0.2	22.0	0.1	18.2	0.1	14.9	0.1	12.0	0.1	10.0	0.1
Other	25.4	0.1	17.5	0.1	13.7	0.1	13.2	0.1	11.4	0.1	9.0	0.1
Diagnostic x-ray	2,644.4	9.9	2,213.4	9.6	1,918.6	9.1	1,700.9	8.8	1,515.4	8.6	1,238.0	8.2
Office	1,056.5	4.0	851.2	3.7	775.0	3.7	635.0	3.3	554.9	3.2	471.3	3.1
Inpatient	920.4	3.5	826.0	3.6	742.3	3.5	742.5	3.9	704.9	4.0	573.2	3.8
Outpatient hospital	588.4	2.2	469.8	2.0	335.3	1.6	267.4	1.4	210.2	1.2	156.9	1.0
Other	79.1	0.3	66.4	0.3	66.0	0.3	56.0	0.3	45.4	0.3	36.6	0.2
Clinical lab	2,794.7	10.5	2,439.0	10.6	2,184.4	10.4	1,952.5	10.2	1,797.9	10.2	1,519.1	10.0
Office	1,217.5	4.6	1,073.8	4.7	983.4	4.7	931.0	4.8	832.0	4.7	704.9	4.7
Inpatient	468.0	1.8	451.5	2.0	435.2	2.1	457.4	2.4	524.0	3.0	456.0	3.0
Outpatient hospital	188.9	0.7	164.3	0.7	122.1	0.6	94.0	0.5	68.7	0.4	53.7	0.4
Other	920.3	3.5	749.4	3.3	643.7	3.1	470.1	2.4	373.2	2.1	304.5	2.0
Radiation therapy	376.0	1.4	314.5	1.4	273.7	1.3	238.1	1.2	214.7	1.2	180.3	1.2
Office	163.2	0.6	134.1	0.6	110.5	0.5	87.8	0.5	73.8	0.4	60.0	0.4
Inpatient	42.4	0.2	41.1	0.2	37.1	0.2	41.9	0.2	49.4	0.3	53.8	0.4
Outpatient hospital	159.6	0.6	131.3	0.6	118.4	0.6	101.6	0.5	86.0	0.5	62.9	0.4
Other	10.8	0.0	8.0	0.0	7.7	0.0	6.8	0.0	5.5	0.0	3.6	0.0
Anesthesia	1,093.8	4.1	981.6	4.3	945.0	4.5	871.7	4.5	805.8	4.6	695.2	4.6
Office	5.7	0.0	6.9	0.0	9.1	0.0	4.3	0.0	3.3	0.0	2.5	0.0
Inpatient	860.2	3.2	777.2	3.4	808.6	3.9	819.3	4.3	783.7	4.5	681.5	4.5
Outpatient hospital	221.3	0.8	191.4	0.8	119.7	0.6	44.1	0.2	18.2	0.1	11.0	0.1
Other	6.6	0.0	6.1	0.0	7.7	0.0	3.9	0.0	0.6	0.0	0.2	0.0
Assistant at surgery	313.2	1.2	322.9	1.4	356.8	1.7	327.2	1.7	291.3	1.7	254.3	1.7
Office	3.9	0.0	4.9	0.0	7.6	0.0	4.1	0.0	3.8	0.0	3.1	0.0
Inpatient	283.0	1.1	285.6	1.2	284.2	1.4	294.1	1.5	278.2	1.6	247.7	1.6
Outpatient hospital	22.3	0.1	30.2	0.1	62.0	0.3	27.8	0.1	8.9	0.1	3.4	0.0
Other	4.0	0.0	2.2	0.0	3.1	0.0	1.3	0.0	0.3	0.0	0.1	0.0

Table 3

Assignment Rate Based on Charges, FY 1977-1988

Fiscal Year	All Part B Services	Physician Services **
1977	46.4	
1978	47.7	
1979	48.9	
1980	49.8	
1981	51.2	
1982	52.1	
1983	53.7	
1984	57.0	
1985	66.9	65.5
1986	68.9	66.4
1987	73.0	70.8
1988	78.4	77.0

* Based on allowed charges,
** Based on covered charges, prior to reasonable charge reductions.

Source: HCFA Bureau of Program Operations.

Table 4

Trends in Physicians' Expenditures Per Inpatient Admission, 1982-1987

Year	Physicians' Expenditures ($Millions)	Admissions (Thousands)	Part B Expenditures per Admission ($)	Percent Change per Admission
	$ 9,374	11,278	$ 831	-
1983	10,723	11,812	908	9.2%
1984	10,935	11,508	950	4.7
1985	10,497	10,904	963	1.3
1986	10,783	10,795	999	3.8
1987	11,975	10,841	1,105	10.6

Source: Medicare Part B Data System; American Hospital Association Panel Survey.

Table 5

Medicare average allowed charge per office visit and percent distribution of visits by type of visit for new and established patients: Calendar years 1985 to 1987 1/

Type of office visit	1987		1986		1985	
	Percent of visits	Average charge	Percent of visits	Average charge	Percent of visits	Average charge
New patient visits						
Total	100.0%	$41.54	100.0%	$37.37	100.0%	$34.91
Brief service	7.7	23.51	9.3	21.52	10.1	20.41
Limited service	18.8	29.40	19.9	26.79	23.6	24.68
Intermediate service	27.6	35.04	27.3	32.23	25.2	31.30
Extended service	9.7	38.70	8.5	34.26	7.7	32.31
Comprehensive service	36.4	57.44	35.0	52.32	33.4	49.80
Established patient visits						
Total	100.0	24.00	100.0	21.96	100.0	21.11
Minimal service	1.8	11.71	1.7	11.75	2.2	12.74
Brief service	11.8	16.99	13.3	15.75	14.4	15.48
Limited service	37.3	20.56	37.7	19.11	38.4	18.74
Intermediate service	37.5	25.71	36.1	23.54	34.4	22.55
Extended service	8.0	33.59	7.5	30.58	6.7	29.30
Comprehensive service	3.7	48.87	3.7	44.82	3.9	42.75
All office visits						
Total	100.0	25.26	100.0	23.09	100.0	1.47
New patient	7.2	41.54	7.3	37.37	7.5	34.91
Established patient	92.8	24.00	92.7	21.96	92.5	21.11

1/ HCPCs 90000 through 90080. Carrier local codes have been excluded from these data. Data for six Part B Carriers have been omitted from the computations in this table.

SOURCE: HCFA, BDMS, BMAD System, Procedure File.

Table 6

Medicare average allowed charge per inpatient hospital visit and percent distribution of visits by initial care and subsequent care visits: Calendar years 1985 to 1987 1/

Type of inpatient hospital visit	1987		1986		1985	
	Percent	Average charge	Percent	Average charge	Percent	Average charge
Initial care visits						
Total	100.0%	$71.23	100.0%	$65.00	100.0%	$62.25
Brief	6.7	46.12	8.0	43.28	10.2	42.52
Intermediate	23.0	60.25	23.7	55.59	23.7	54.33
Comprehensive	70.3	77.20	68.3	70.80	66.1	68.13
	100.0		100.0			
Subsequent care visits						
Total	100.0	29.25	100.0	25.88	100.0	24.81
Brief	11.0	20.50	13.4	18.73	16.2	17.97
Limited	32.4	25.93	33.6	23.55	32.9	23.01
Intermediate	40.1	30.22	38.0	26.86	37.2	26.24
Extended	9.7	39.69	8.9	35.45	8.4	34.27
Comprehensive	3.1	41.87	3.0	37.04	2.5	34.60
Discharge day management	3.6	35.92	3.2	31.66	2.6	29.95
All visits						
Total	100.0	33.37	100.0	29.98	100.0	28.54
Initial care	9.9	71.23	10.5	65.00	10.0	62.25
Subsequent care	90.1	29.25	89.5	25.88	90.0	24.81

1/ HCPCs 90200 through 90292. Carrier local codes have been excluded from these data. Data for six Part A Carriers have been omitted from the computations in this table.

SOURCE: HCFA, BDMS, BMAD System, Procedure File.

TOTAL MEDICARE PHYSICIAN EXPENDITURES PER BENEFICIARY BY STATE, 1983-1986

HALFYEAR	ALL STATES	ALABAMA	CONNECTICUT	WASHINGTON	WISCONSIN
JANUARY-JUNE 1983	$220.96	$220.40	$229.53	$205.65	$227.61
JULY-DECEMBER 1983	228.67	222.69	249.21	209.86	234.60
JANUARY-JUNE 1984	246.98	239.10	262.60	244.51	244.95
JULY-DECEMBER 1984	236.52	224.42	259.36	223.69	241.27
JANUARY-JUNE 1985	262.91	249.68	283.12	278.43	247.93
JULY-DECEMBER 1985	268.92	253.90	289.46	283.62	255.74
JANUARY-JUNE 1986	286.72	293.41	296.72	304.06	260.95
JULY-DECEMBER 1986	295.65	307.18	319.31	304.40	263.93
% CHANGE 1983-1984	7.5%	4.6%	9.0%	12.7%	5.2%
% CHANGE 1984-1985	10.0	8.6	9.7	20.0	3.6
% CHANGE 1985-1986	9.5	19.3	7.6	8.3	4.2
% CHANGE 1983-1986	29.5	35.5	28.7	46.4	13.6

SOURCE: MEDICARE PART B CLAIMS FOR ALABAMA, CONNECTICUT, WASHINGTON, AND WISCONSIN.

Center for Health Economics Research

Table 8

SOURCES OF INCREASE IN PER BENEFICIARY SPENDING FOR PHYSICIANS' SERVICES, 1983-86

Type of Service	Percent of Increase	Percent of Total Expenditures
Medical Care	17.9%	31.6%
Consultations	3.0	3.1
Surgery	41.3	35.8
Anesthesia	4.6	4.7
Assistant Surgery	1.5	2.6
Radiology	15.3	12.6
Laboratory	-0.1	3.0
Specialized Tests	10.6	5.3
Other	5.9	1.3
	100.0%	100.0%

Source: Medicare Part B claims for Alabama, Connecticut, Washington and Wisconsin.

Center for Health Economics Research

Table 9

TOTAL MEDICARE PHYSICIAN EXPENDITURES PER BENEFICIARY BY LOCATION OF SERVICE, 1983-1986

HALFYEAR	OFFICE	INPATIENT	OPD/ASC	SNF/NH	HOME	OTHER SETTINGS	TOTAL
JANUARY-JUNE 1983	$63.16	$140.67	$11.84	$2.87	$1.70	$0.73	$220.96
JULY-DECEMBER 1983	67.10	142.70	12.94	3.16	1.74	1.04	228.67
JANUARY-JUNE 1984	72.54	150.91	16.68	3.49	1.88	1.49	246.98
JULY-DECEMBER 1984	72.08	136.42	21.74	3.25	1.89	1.15	236.52
JANUARY-JUNE 1985	82.59	141.89	31.39	3.75	2.16	1.13	262.91
JULY-DECEMBER 1985	86.94	137.58	37.57	3.72	1.94	1.16	268.92
JANUARY-JUNE 1986	94.22	143.35	42.28	3.90	1.73	1.25	286.72
JULY-DECEMBER 1986	99.48	142.31	47.46	4.26	1.24	0.90	295.65
% CHANGE 1983-1984	11.0%	1.4%	55.0%	11.8%	9.6%	49.2%	7.5%
% CHANGE 1984-1985	17.2	-2.7	79.5	10.8	8.8	-13.3	10.0
% CHANGE 1985-1986	14.3	2.2	30.1	9.2	-27.6	-6.1	9.5
% CHANGE 1983-1986	48.7	0.8	262.1	35.3	-13.7	21.5	29.5

SOURCE: MEDICARE PART B CLAIMS FOR ALABAMA, CONNECTICUT, WASHINGTON, AND WISCONSIN.

Center for Health Economics Research

Table 10

SOURCES OF INCREASE IN MEDICARE SPENDING PER BENEFICIARY FOR SURGERY, 1983-1986

Surgical Procedure	Percent Share	Dollar Share
Lens Procedures	25.3%	$13.89
Colonoscopy	9.5	5.20
CABG Surgery	4.7	2.57
Cardiac Catheterization	4.0	2.18
Upper GI Endoscopy	3.0	1.67
Knee Replacement	1.7	0.96
Hip Replacement	1.0	0.56
Sigmoidoscopy	0.9	0.50
TURP	0.8	0.43
Hip Fracture	0.7	0.37
Hernia Repair	0.3	0.19
Bronchoscopy	0.0	0.00
Carotid Thromboendarterectomy	-0.1	-0.08
Cholecystectomy	-0.1	-0.04
Proctosigmoidoscopy	-0.4	-0.20
Partial Colectomy	-0.6	-0.32
Pacemaker Insertion	-0.7	-0.39
Other Surgery	50.0	27.39
	100.0%	$54.88

Source: **Medicare Part B claims for Alabama, Connecticut, Washington and Wisconsin.**

Center for Health Economics Research

Table 11

SHIFTS IN DISTRIBUTION OF MEDICARE OFFICE AND HOSPITAL VISIT CODES, 1983-1986

	1983		1984		1985		1986	
Office Visits								
New Patient								
Brief	0.8%		0.6%		0.6%		0.5%	
Limited	2.3		1.9		1.8		1.6	
Intermediate	2.1	6.7%	1.4	5.7%	1.7	6.0%	1.9	6.1%
Extended	0.4		0.5		0.5		0.6	
Comprehensive	1.1		1.3		1.4		1.5	
Established Patient								
Minimal	2.1		2.0		1.8		1.7	
Brief	37.2		31.6		24.7		18.9	
Limited	29.4		31.4		33.6		36.1	
Intermediate	19.6		22.7		25.9		28.8	
Extended	3.2		3.9		4.9		5.2	
Comprehensive	2.0		2.7		3.2		3.1	
	100.0%		100.0%		100.0%		100.0%	
Hospital Visits								
Initial Care								
Brief	1.1%		0.9%		0.7%		0.7%	
Intermediate	3.3	9.5%	3.4	10.2%	3.2	10.7%	2.7	10.7%
Comprehensive	5.1		5.9		6.8		7.3	
Subsequent Care								
Brief	30.1		26.2		19.9		15.3	
Limited	32.2		30.9		30.8		32.7	
Intermediate	22.4		25.3		28.9		30.1	
Extended	3.7		4.3		5.7		6.2	
Comprehensive	1.5		2.1		2.7		3.1	
Discharge Day Management	0.6		1.0		1.4		2.0	
	100.0%		100.0%		100.0%		100.0%	

Source: Medicare Part B claims for Alabama, Connecticut, Washington and Wisconsin.

Center for Health Economics Research

Table 12

Allowed Charges for Physician Services, Five Selected States, 1983 to 1985

State	Allowed Charges, 1983 ($ millions)	Allowed Charges, 1985 (Millions)	Percent Change
Five States	$ 741.1	$ 879.6	18.7%
South Carolina	102.5	130.6	27.4
South Dakota	38.3	46.2	20.6
Indiana	287.4	338.5	17.8
Washington	261.0	307.1	17.7
North Dakota	51.8	57.2	10.4

Source: Mandex Inc., Final Report: Changes in Medicare Part B Physician Charges, 1988

Table 13

Decomposition of Increases in Allowed Charges by Type of Service, Five Selected States, 1983-1985

	Total	Type of Service				
		Surgery	Medical	Diagnostic X-ray	Anesthesia	Other
5 States	100.0%	50.5%	17.4%	13.1	6.8	12.1
Indiana	100.0	54.1	12.7	16.3	4.8	12.1
Washington	100.0	45.5	24.4	13.5	6.3	10.0
South Carolina	100.0	54.8	19.0	9.7	6.5	10.0
North Dakota	100.0	46.0	6.8	2.4	24.6	20.2
South Dakota	100.0	44.5	8.8	10.4	11.1	25.1

Source: Table R.2, Changes in Medicare Part B Physician Changes: Appendix to Final Report, Mandex, Inc , October 1988.

Table 14
Percent Change in Medicare Expenditures Per Enrollee
All U.S., 1983-1985

	Percent Change
Region	14.8%
New England	19.1%
Middle Atlantic	18.8
South Atlantic	14.0
E.N. Central	11.5
W.N. Central	15.9
E.S. Central	15.0
W.S. Central	14.7
Mountain	21.0
Pacific	10.2

Source: Urban Institute.

Table 15

TABLE A3
Expenditures on Physicians' Services, Canada and United States

Year	Expenditures per capita		Physicians' fees[1]		Utilization per capita[1]		Physicians per (000) capita		"Real billings" per physician[1]		Physicians' fees/CPI[1]		Physicians' fees/ GNP deflator[1]	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
1960	$ 19.82	$ 29.93	69.9	59.3	49.0	69.1	1.138	1.366	65.2	78.4	94.1	81.1	96.9	85.2
1961	21.25	30.59	71.1	60.8	51.6	68.8	1.158	1.345	67.6	79.3	94.9	82.3	98.2	86.5
1962	21.82	33.24	73.2	62.6	51.5	72.6	1.242	1.355	62.9	83.2	96.6	83.8	99.7	87.1
1963	23.91	34.75	74.5	64.0	55.4	74.3	1.263	1.374	66.5	83.9	96.5	84.6	99.6	87.7
1964	25.65	40.08	76.1	65.6	58.2	83.6	1.279	1.394	69.1	93.0	96.8	85.6	99.3	88.5
1965	27.70	41.65	78.7	68.0	60.8	83.8	1.284	1.414	71.6	91.9	97.8	87.3	99.5	89.3
1966	30.19	44.53	80.1	71.9	65.1	84.7	1.316	1.438	75.0	91.4	95.9	89.7	97.0	91.2
1967	33.62	48.42	86.6	77.0	67.0	86.0	1.342	1.464	75.8	91.1	100.1	93.4	100.8	95.2
1968	38.02	52.71	90.6	81.3	72.5	88.7	1.351	1.462	81.3	94.1	100.7	94.6	102.1	95.7
1969	42.87	59.21	96.1	86.9	77.0	93.2	1.401	1.479	83.4	97.8	102.1	96.0	103.9	97.0
1970	48.80	66.48	97.8	93.5	86.2	97.3	1.451	1.518	89.9	99.4	100.6	97.5	100.9	98.8
1971	57.91	73.10	100.0	100.0	100.0	100.0	1.517	1.551	100.0	100.0	100.0	100.0	100.0	100.0
1972	63.52	78.36	101.4	103.0	108.2	104.1	1.572	1.587	104.4	101.7	96.7	99.7	96.6	98.4
1973	67.21	86.31	102.7	106.4	113.0	111.0	1.616	1.607	105.9	107.1	91.2	97.0	89.6	95.4
1974	74.11	95.07	107.4	116.2	119.2	111.9	1.653	1.659	109.2	103.7	85.9	95.4	81.3	95.5
1975	84.78	110.72	114.2	130.4	128.2	116.1	1.709	1.710	113.6	105.4	82.5	98.1	78.1	97.6
1976	94.07	121.75	121.4	145.1	133.8	114.8	1.733	1.762	117.1	101.0	81.6	103.2	75.7	102.1
1977	102.60	139.67	132.1	158.6	134.1	120.5	1.767	1.777	115.2	105.2	82.2	106.0	76.7	104.6
1978	113.93	155.25	139.6	171.7	140.9	123.7	1.786	1.839	119.7	104.3	79.7	106.6	76.0	105.6
1979	126.85	172.68	150.0	187.5	146.1	126.0	1.805	1.892	122.6	103.3	78.4	104.6	74.0	105.9
1980	142.96	198.90	165.5	207.3	149.2	131.2	1.828	1.944	123.8	104.7	78.6	101.9	73.3	107.4
1981	163.24	230.45	184.9	230.2	152.5	137.0	1.858	1.962	124.4	108.3	78.0	102.5	74.0	108.7
1982	188.67	257.29	209.1	251.8	155.8	139.8	1.912	2.014	123.7	107.7	79.7	105.7	75.9	111.8
1983	213.71	282.06	231.6	271.2	159.3	142.3	1.953	2.067	123.9	106.8	83.4	110.2	79.7	116.0
1984	231.05	308.13	244.6	290.3	163.1	145.2	1.976	2.118	125.3	106.3	84.4	113.2	81.7	119.2
1985	246.23	335.36	253.4	307.0	167.8	149.4	2.036	2.166	125.1	107.0	84.1	115.6	81.9	122.3

[1] 1971 = 100.

Sources: Canada, Health and Welfare Canada 1979, 1984, 1986, 1987; Canada, Health and Welfare Canada, *Canada Health Manpower Inventory*, various years; Barer and Evans 1983; Canada, Department of Finance 1986; Waldo, Levit, and Lazenby 1986; U.S. Bureau of the Census, *Statistical Abstract of the United States*, various years; U.S. Department of Commerce 1986.

(from Barer, Evans, and Labelle, Milbank Quarterly, 1988, #1)

TABLE 16

ILLUSTRATION OF BUDGET NEUTRAL MEDICARE PAYMENT REDISTRIBUTIONS, ASSUMING SELECTED PHYSICIAN BEHAVIORIAL CHANGES, HARVARD RB-RVS BASED PAYMENTS VS. CURRENT ALLOWED CHARGES, PRELIMINARY FINDINGS

	BEHAVIORIAL CHANGE ASSUMPTION*			
	No behaviorial offset	25% offset	50% offset	75% offset
	(percent change in Medicare revenues)			
Dermatology	4%	2%	0%	- 1%
Family Pract.	66	57	45	30
General Surg.	-10	- 8	- 6	- 3
Gynecology	1	1	1	1
Internal Med.	28	22	16	8
Ophthalmology	-31	-26	-19	-11
Orthopedics	5	4	3	2
Otorhinolar.	16	14	11	7
Pathology	-23	-19	-15	- 9
Pediatrics	31	25	19	11
Psychiatry	- 9	- 9	- 9	- 6
Radiology	-36	-30	-22	-13
Thoracic Surg.	-44	-35	-25	-14
Urology	3	1	- 1	- 1

* These results are based on an assumption that physicians receiving a reduced payment for a service will partially (by the indicated assumed percentage) offset the loss by increasing volume/intensity of the service.

Note:

(1) To maintain budget neutrality under behaviorial change assumptions, the conversion factor applied to the RBRVU to obtain an allowed charge for a service must be reduced to account for increased volume/intensity of services. For example, under these alternative simulations, the conversion factor for no behavior change is 0.537 while the conversion factor for 50 percent behavior change is 0.458, a reduction of 14.7 percent.

(2) Data include specialties and services covered by Harvard RBRVS study.

Source: HCFA, Office of Research and Demonstrations. National 1988 estimates based on 1986 BMAD Procedure file updated; Harvard RBRVS final phase I relative values.

Relative Value Scales for Physician Services

U. S. Department of Health and Human Services
Health Care Financing Administration
September 1989

REPORT TO CONGRESS

RELATIVE VALUE SCALES: ISSUES AND OPTIONS

Louis W. Sullivan, M.D.
Secretary
Department of Health and Human Services
1989

Table of Contents

EXECUTIVE SUMMARY

CHAPTER 1. AN INTRODUCTION TO RELATIVE VALUE SCALES

CHAPTER 2. CONSTRUCTION OF THE HARVARD RESOURCE-BASED RELATIVE VALUE SCALE (RBRVS)

CHAPTER 3. CRITIQUE OF THE HARVARD RBRVS

CHAPTER 4. ANALYSIS OF THE IMPACT OF USING AN RVS FOR PAYMENT PURPOSES

APPENDICES

A. How Medicare Determines Physician Payments

B. Technical Documentation for HCFA Relative Value Scale Simulations

C. Geographic Practice Cost Indices

D. Allowed Charges by HCPCS for Additive RVS Models

E. Allowed Charges for Selected Anesthesia Procedures

LIST OF DETAILED TABLES

2.1 Percentage of 1987 Medicare Allowed Charges for Physicians' Services Covered by Harvard RBRVS by Surveyed and Unsurveyed Specialty

2.2 Percentage of 1987 Medicare Allowed Charges for Physicians' Services Accounted for by Harvard RBRVS

4.1 Percent Change in Medicare Allowed Charges, by Specialty for Various RVS Based Payment Models

4.2 Percent Change in Medicare Allowed Charges, by Specialty, under Various Behavioral Responses at the Procedure Level, Assuming Budget Neutrality, HCFA Multiplicative Model, no GPCI

4.3 Percent Change in Medicare Allowed Charges by State for Various RVS Payment Models

4.4 Percent Change in Medicare Allowed Charges by Locality for Various Multiplicative Models Compared to Current Medicare Allowed Charges

4.5 Percent Change in Medicare Allowed Charges by Locality for Additive Model Compared to Current Medicare Charges

4.6 Percent Change in Medicare Allowed Charges by Specialty and by State for Four HCFA Additive Models

4.7A1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Multiplicative Model, with GPCI

4.7A2 Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Multiplicative Model with GPCI

4.7B1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Additive Model, no GPCI

4.7B2 Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Additive Model, no GPCI

4.7C1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Additive Model, GPCI on Overhead Costs

4.7C2 Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Additive Model, GPCI on Overhead Costs

4.7D1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Additive Model with GPCI on Both Components

4.7D2 Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Additive Model with GPCI on Both Components

4.7E1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for Charge-Based RVS Model with Interim GPCI

4.8A1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by State for the HCFA Multiplicative Model with GPCI

4.8A2 Distribution of Providers Who Gain or Lose by Change in Medicare Allowed Charges, by State for the HCFA Multiplicative Model with GPCI

4.8B1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by State for the HCFA Additive Model with No GPCI

4.8B2 Distribution of Providers Who Gain or Lose by Change in Medicare Allowed Charges, by State for the HCFA Additive Model with No GPCI

4.8C1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by State for the HCFA Additive Model with GPCI on Overhead Costs

4.8C2 Distribution of Provides Who Gain or Lose by Change in Medicare Allowed Charges, by State for the HCFA Additive Model with GPCI on Overhead Costs

4.8D1 Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by State for HCFA Additive Model with GPCI on Both Components

4.8D2 Distribution of Providers Who Gain or Lose by Change in Medicare Allowed Charges, by State for HCFA Additive Model with GPCI on Both Components

4.9A1 Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability under Various RBRVS Based Implementation Models: HCFA Additive Model - No GPCI - Current Balance Billing Practices

4.9A2 Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability under Various RBRVS Based Implementation Models: HCFA Additive Model - No GPCI - 120 Percent Balance Billing Cap

4.9B1 Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability under Various RBRVS Based Implementation Models: HCFA Additive Model - GPCI on Overhead Costs - Current Balance Billing Practice

4.9B2 Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability under Various RBRVS Based Implementation Models: HCFA Additive Model - GPCI on Overhead Costs - 120 Percent Balance Billing Cap

4.9C1 Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability under Various RBRVS Based Implementation Models: HCFA Additive Model - GPCI on Both Components - Current Balance Billing Practice

4.9C2 Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability under Various RBRVS Based Implementation Models: HCFA Additive Model - GPCI on Both Components - 120 percent Balance Billing cap

4.10 Mean Charges, by HCPCS, using Adjusted 1987 Procedure File and GPCI: CPR vs. RBRVS Payments using Three Alternative Additive Models

ACKNOWLEDGEMENTS

Preparation of this report was organized and supervised by C. Ross Anthony, Ph.D., Associate Administrator for Program Development, Health Care Financing Administration (HCFA). The report was written under the direction of George J. Schieber, Ph.D., Acting Director, Office of Research and Demonstrations (ORD). Direct management of the preparation of the report was performed by Stephen F. Jencks, M.D., Acting Director, Office of Research (OR), William Sobaski, Director, Division of Reimbursement and Economic Studies, OR, ORD, and Sherry Terrell, Ph.D., Chief, Non-Institutional Studies Branch, OR, ORD.

Jesse M. Levy, Ph.D., was the primary report author and report manager. Stephen F. Jencks was the coauthor of chapter 4, and Deborah K. Williams authored an early draft of that chapter. Various appendices were written by Benson L. Dutton, Jr., Terrence L. Kay, and Deborah K. Williams. Reviews and comments were made by various components of the HCFA.

All simulations on the Resource-Based Relative Value Scale (RBRVS) payment model performed specifically for this report were performed by Terrence L. Kay and Deborah K. Williams. Preparation of data files for use in the simulations was performed by Terrence L. Kay, G.W. Kirby, and Deborah K. Williams. Simulations pertaining to the charge-based Relative Value Scale were performed by Janet B. Mitchell, Ph.D., of the Center for Health Economics Research.

This report could not have been written without the input of experts across the United States who consulted with HCFA. These experts in the fields of economics, medicine, and statistics included the following: James F. Burdick, M.D., M.P.P., David Draper, Ph.D., Bert F. Green, Jr., Ph.D., Richard H. Egdahl, M.D., Thomas A. Louis, Ph.D., Janet B. Mitchell, Ph.D., Joseph P. Newhouse, Ph.D., Mark V. Pauly, Ph.D., Earl Steinberg, M.D., W.P. Welch, Ph.D., Finis Welch, Ph.D., and Stephen Zuckerman, Ph.D. Special thanks to the many specialty societies who contributed many helpful comments pertaining to the RBRVS study.

Finally, we would like to acknowledge the efforts of Francine J. Jordan who spent unlimited hours typing and retyping data tables and references.

Executive Summary

The Consolidated Omnibus Budget Reconciliation Act of 1985 (P.L. 99-272) requires the Secretary of Health and Human Services to develop a relative value scale (RVS) for physicians' services and to make recommendations to Congress for using this scale for determining Medicare payments.

An RVS is a set of numerical values, one for each service that physicians or other medical care providers may provide, reflecting the relative "valuation" of each service. By itself, an RVS does not set payment. To turn the RVS into a fee schedule, the relative values must be multiplied by a monetary conversion factor (e.g., $10 per unit). The valuation incorporated into the RVS can be determined in many ways -- from current charges, from consensus among physicians or between payers and physicians or among patients; by unilateral decisions of the payer; or from the resources used in provision of service. An RVS based on resources use is called a resource-based or RBRVS.

This report focuses, because of strong interest in Congress and elsewhere, on the viability, development, evaluation, strengths, weaknesses, and possible uses of the RBRVS developed at Harvard University by William C. Hsiao, Ph.D., and his colleagues, under cooperative agreement with the Health Care Financing Administration (HCFA). The report describes general issues in the current Medicare payment system, including motivation for RVSs, and in the construction of RVSs (Chapter 1); explains how the Harvard team developed the Harvard RBRVS (Chapter 2); examines methodological issues in the design of the RBRVS (Chapter 3); and presents simulations (Chapter 4) of the impact of various payment options for physician payment under Medicare based upon RVSs, including the Harvard RBRVS, additive models based upon the Harvard RBRVS, and a charge-based RVS. This chapter also presents discussions on adjustments to reflect differences in practice costs among geographic areas. The report concludes with a discussion of the advisability and feasibility of using the Harvard RBRVS or variations of it for Medicare payment purposes.

Background.

Since Medicare began, the Supplementary Medical Insurance program (Part B) has paid physicians using a fee-for-service system called "customary, prevailing, and reasonable" (CPR) (Appendix A describes the CPR system in detail). Under CPR, physician payments are based upon physicians' actual charges to the Medicare program.

Available evidence indicates that CPR has provided access to physician care and financial protection for Medicare beneficiaries. CPR has been less successful by other criteria: fees, volume and intensity of services, and overall expenditures have increased dramatically in the last decade. Between 1975 and 1987, Medicare's Part B expenditures per enrollee grew at an annual rate of 15.0 percent, while per capita Gross National Product grew at only 7.9 percent. There is general agreement that, to the extent that this growth is attributable to the payment system, the problem is fee-for-service payment and that an RVS or any other fee-schedule based payment system would probably not have reduced growth greatly.

The CPR system is complex, and some critics contend that simplification of the system should be an important goal of any reform, but given the need to update any RVS over time, an RVS-based payment system would not necessarily be simpler. The Harvard study documents that CPR has also resulted in payments that are higher for technological and invasive procedures than for evaluation and management services that require comparable resources as defined by the study. Critics of CPR argue this payment differential uses Medicare funds inefficiently, discourages primary care, and is inequitable to physicians across specialties. These critics argue that the relatively higher payments for technological procedures encourages unnecessary provision of these procedures, thus raising total costs while paying more for these procedures than is necessary to secure access to care for Medicare beneficiaries. As with other claims made criticizing or supporting either CPR or a resource-based payment system, there has been little empirical work performed that either substantiates or refutes the claim that payment rates under CPR encourage inappropriate care or, alternatively, that resource based payment would reduce inappropriate care. Moreover, plausible theoretical arguments can be made on both sides of the issue.

If, however, payments under CPR are excessive for technological and invasive procedures, it is unclear whether beneficiaries would still have access to such services if payments for these services were cut. Access to primary care does not currently appear to be a problem at the national level, although there may be localized access problems. The extent to which this is a problem of the payment system as opposed to the other problems faced by underserved areas is not clear. Differences in payments for different services may be inequitable if equity requires equal pay for comparable work, but the question of equity is less clear if one takes account of factors such as the supply of specialties, the desires of beneficiaries for services, and medical and social value of the services.

While it is clear that the Harvard RBRVS cannot resolve all complaints against the current Medicare fee-for-service payment system and, more specifically, CPR, its advocates urge that it can:

- provide a tool for simplifying the payment system.
- address both the equity and efficiency issues, by revaluing procedures relative to their resource inputs and reducing incentives to provide an excess of certain services while encouraging provision of others.
- equalize incentives across procedures, resulting, at least in theory, in more appropriate care for the Medicare beneficiary.

Again, the claim that the Harvard RBRVS could achieve these goals has not been substantiated by empirical evidence. In addition, many of these claims could be made for other RVS-based payment systems. For that reason, this report also discusses modifications of the Harvard RBRVS as well as a charge-based RVS.

Nonetheless, an RVS-based fee schedule, like other fee-for-service approaches to payment reform, does not directly address the growth in volume and intensity of services that has been the main component in the increase in Medicare expenditures (see the recent report to Congress, "Growth in the Volume and Intensity of Physician Services: Issues and Options").

Construction of the Harvard RBRVS. The goal of the Harvard study was to develop an RBRVS by measuring the resource inputs used in producing a service.

The construction of the Harvard RBRVS was a multistep process. The first step was to measure the amount of work provided by the physician during the actual performance of the procedure (intraservice work). The Harvard study team determined that Current Procedural Terminology, Fourth Edition (CPT-4) codes should not be used directly as the basis for surveying physicians to estimate resource use. As a result, the Harvard team created vignettes and surveyed physicians to estimate work for the vignettes. Because CPT is the basis of the coding system under which physicians are paid under Medicare, it was then necessary to assign the appropriate CPT codes to these vignettes. These ratings were done on a specialty specific basis and resulted in 18 different scales.

Second, statistical techniques and physician consensus were used to merge these 18 scales, resulting in one scale that contained relative intraservice work values for all surveyed procedures in the included specialties. Since this scale included only work performed during the procedure and not work done by the physician before (pre-service work) or after (post-service work) the procedure itself, estimates for these types of work were generated and added onto the work values. This resulted in an RVS for total work.

Next, because only 372 unique services were actually surveyed, it was necessary to extrapolate to the nonsurveyed procedures. The underlying assumption for extrapolation was that, within small families of CPT-4 codes, charge ratios are reasonable proxies for relative work differences.

The study team developed a model that measured two input resources in addition to physician work: practice costs and opportunity costs. Practice cost information was derived from specialty-specific national survey data; opportunity costs were measured by attributing costs to the earnings lost during specialty training. In the Harvard model, the three factors combine multiplicatively to produce the RBRV for each service:

$$RBRV=(TW)(1+RPC)(1+AST)$$

where TW is the total work input by the physician, RPC is an index of relative practice costs, and AST is an index of relative amortized opportunity cost of specialty training. There is not broad-based agreement that this is the most appropriate model for determining the RBRV; another approach that has been discussed is that costs attributable to physician work be added to those attributable to practice costs rather than multiplied.

Results. The study found that there was roughly 200-fold variation in resource inputs across services. Comparison of 1986 Medicare charges to Harvard RBRVS values for invasive procedures and office visits showed that the typical ratio for invasive procedures was more than three times greater than the ratio for office visits, implying that office visits are relatively underpaid. The Harvard team compared 1986 Medicare mean charges to Harvard RBRVS-based charges and found that many surgical procedures could vary in payments between the two by more than 60 percent.

Critique of the Harvard RBRVS. HCFA extensively reviewed and analyzed the study and its results. In performing the analysis, HCFA consulted with experts in the fields of medicine, statistics, and economics, solicited comments from physician specialty groups and conducted extensive simulations. Generally, the Harvard study represents a methodologically rigorous effort to measure resource use. The study demonstrates that it is possible to use physician resource inputs to establish RVSs within specialties and demonstrates that it is possible to align these specialty-specific scales to create a common scale of relative values that are meaningful across specialties.

The Harvard RBRVS, as it is currently constructed, however, is not yet ready for full implementation. In addition to the obvious fact that the study included only 18 specialties, there are a number of significant issues with the study itself, and several significant issues that would have to be resolved before the Harvard RBRVS could be fully implemented for Medicare payment purposes. Many of these issues appear to be solvable, but may require a large allocation of resources. The major issues raised by the Harvard RBRVS follow.

1. Because the Harvard RBRVS focuses only on resource input, it ignores the role of demand in determining prices. As such it ignores the value that patients attach to particular services. This implies that payments that might be set under this system may not be any closer to optimal economic prices than those that currently exist.

2. Measurement of work during the performance of the service (intraservice work) and the assignment of the vignettes to the CPT codes raised a number of concerns:

- The vignettes did not necessarily reflect the Medicare population. Thus, if the work required to perform a service for those above age 65 is different than the work required for the general population, the resulting relative values, when used for the Medicare population, will be biased.

- There was apparently some difficulty in assigning the appropriate CPT codes to vignettes, particularly for visit codes. The difficulty with visit codes led the Harvard team to propose a separate methodology to derive relative values for visit codes. This methodology involved the use of time in the definition of CPT codes for visits, a step that would involve substantial implementation issues.

-- Since the process of assigning CPT codes was independent of the designing of the vignettes, the vignettes may not represent average resources for the CPT code in question.

3. Although estimates of intrawork were obtained by survey for approximately 400 services, estimates of pre- and post-service work were not obtained by survey. To generate these estimates, 153 of the approximately 400 services surveyed for intrawork were surveyed to obtain estimates of pre- and post-service time. These surveyed values were used to estimate pre- and post-service times for the remainder. Finally, estimates of pre- and post-service work were derived by making assumptions about the relationships between intraservice and pre- and post-service values and estimating values from intraservice results. There are significant questions as to the validity of this methodology for pre- and post-service work which represent as much as 46 percent of total work for some procedures.

4. The validity of the common scale that crosses specialties hinges on identifying linking procedures across specialties. While there is no evidence to suggest that the linking procedures are not valid, there is some question as to whether different panels of physicians would have identified different procedures. Defining different procedures could change the locations of procedures on the common scale and change the relative values.

5. Practice costs represent approximately 45 percent of physicians' gross revenues and a comparable portion of input into physician services. Relative values, and hence payments, can vary substantially based on the choice of allocation method used. A variety of allocation methods are possible, including methods developed by the Harvard team, by the Physician Payment Review Commission (PPRC), and by HCFA. Unfortunately, there are insufficient data to determine which method is most accurate. This area needs further study.

6. Practice costs and opportunity costs are calculated by specialty, not by service. This implies that any procedure performed by specialties with different practice costs will be paid differently. It is the case, however, that there is no one theoretically correct way to allocate practice costs.

7. Relative values, practice cost factors, and opportunity cost factors are related to factors such as the state of technology and the market for medical services. Thus, relative values are not constant over time, and they will have to be updated periodically. This updating could involve a major analytic effort.

8. Surveyed codes accounted for more than 30 percent of allowed charges for the included specialties. The extrapolated codes accounted for more than 20 percent and the visit code methodology accounted for more than 35 percent. The extrapolation methodology assumes that within small families of procedures, relative charges are good proxies for differences in work. Although, in general, the assumption that charges vary

systematically with physician effort is justifiable, it appears that this methodology is not universally appropriate and significant questions have been raised as to the overall validity of the method. If relative charges within families do not accurately reflect relative work differences, then the resulting relative values obtained from this methodology will not be appropriate. It was also found that when a family contained more than one surveyed service, the resulting extrapolated values within that family could differ by 10 percent depending upon which surveyed service is used as the benchmark in one family and nearly 50 percent in another. The typical variation is unknown, but may be substantial.

9. The definition of "global" fees for surgery used by Harvard was not consistent with that used by any Medicare carriers. Since the global fee packages used in the study usually consist of fewer services than are included in Medicare global fee packages, Harvard's relative values are usually biased downward. Conforming the RBRVS to a uniform definition will be complex and would require careful implementation.

10. Harvard had difficulty in obtaining estimates of relative values for procedures that involve both professional and technical components. Some survey respondents appear to have incorrectly provided time estimates for both components. In addition, the final data of the study identify all radiology procedures as "unresolved."

11. The Harvard RBRVS assumes that specialty differentials should exist if they reflect different costs of practice and medical education. The appropriateness of paying different amounts for similar services is unclear.

Addressing Issues Raised by the Critique. Harvard has initiated an analytic plan to assess the methodological and usage issues in further detail. Among the issues that Harvard hopes to study further are: validation of all results, more precise estimation of pre- and post-service work, coding for visit codes, extrapolation, and the reliability and validity of the linking procedures used in creating the common scale. Many of these issues may be resolved through increased data collection and analysis. Other options for the functional form are being examined by the PPRC and HCFA.

The Impact Issue. If it is considered valid, the Harvard RBRVS could be used in a number of ways for Medicare payment purposes. Among the potential uses are: 1) to identify "overpriced" procedures and then to limit payments or charges for these procedures; and 2) to establish a Medicare payment schedule.

HCFA performed simulations of a fee schedule based upon the Harvard RBRVS to determine the impact of using it as a basis for a fee schedule for payment for physician services based upon the assumption that any fee schedule would be budget neutral. In addition, HCFA simulated the effects of fee schedules based upon a modification of the Harvard RBRVS using an additive model, as well as a charge-based RVS.

Simulations of the Harvard RBRVS showed that it would result in substantial redistributions. While many of the specialties in question would not experience very large redistributions, others would. Specialties such as family practice and internal medicine would experience large gains under the Harvard RBRVS, while thoracic surgery, radiology, and ophthalmology would be large net losers. The Harvard RBRVS would also often result in large geographic redistributions. These redistributions could, in turn, be affected by the use of a geographic practice cost index that takes into consideration differences in practice costs among localities.

In general, payment for invasive procedures would decrease, while payment for evaluation and management procedures would increase under a payment system based upon the Harvard RBRVS. Using the additive model modifications of the Harvard RBRVS would tend to moderate these redistributions among specialties. Specialties that would gain under the additive models gain less; losers would lose less. It would not necessarily affect geographic redistributions. Under a charge-based RVS, redistributions would be even less. This is so because such a schedule would tend to institutionalize the current payment structure.

Simulations of various models were also performed to estimate changes in beneficiary liability. These simulations were performed for the additive models. They showed that, although an additive variation of the Harvard RBRVS would have major implications for specialties and procedures, on the national level, it would not appreciably affect beneficiary out-of-pocket liability.

Chapter 1

AN INTRODUCTION TO RELATIVE VALUE SCALES

Overview of Report. This is a report on the development of a resource-based relative value scale (RBRVS) for physicians' services and the feasibility and advisability of using such a scale to determine payments for Medicare physician services. Relative value scales (RVSs) can be established in a variety of ways. The basis for an RVS can be charges, costs of production, resource use, or negotiation, among others.

Because of strong interest by the Congress and the Physician Payment Review Commission (PPRC), this report focuses predominantly on the viability, development, evaluation, strengths, weaknesses, and possible uses of the RBRVS developed by Harvard University (Harvard RBRVS) under cooperative agreement with the Health Care Financing Administration (HCFA). Nevertheless, the conceptual basis as well as the advantages and disadvantages of using a charge-based RVS are also analyzed in detail. Chapter 1 describes general issues in the construction of RVSs; Chapter 2 explains how the Harvard team developed the Harvard RBRVS.[1] Chapter 3 examines methodologic issues in design of the Harvard RBRVS; and Chapter 4 presents simulations of the impact of various payment options for physician payment under Medicare based upon RVSs and presents discussions on appropriate adjustors to reflect differences in practice costs among geographic areas. This chapter also presents simulations using a charge-based RVS as a basis for a Medicare fee shedule.

Congressional Mandate. Section 1845(e) of the Social Security Act, as enacted by section 9305(b) of Consolidated Omnibus Budget Reconciliation Act, (P.L. 99-272), and amended by section 9331(e)(3) of the Omnibus Budget Reconciliation Act of 1986, (P.L. 99-509), and section 4045(b) of the Omnibus Budget Reconciliation Act of 1987, (P.L. 100-203):

"(1) The Secretary shall develop a relative value scale that establishes a numerical relationship among the various physicians' services for which payment may be made under this part or under State plans approved under title XIX.

(2) In developing the scale, the Secretary shall consider among other items...(C) factors with respect to the input costs for furnishing particular physicians' services, such as

(i) the differences in costs of furnishing services in different settings,

(ii) the differences in skill levels and training required to perform the services, and

---

[1]For a full description of the Harvard RBRVS, see the final report to HCFA performed under cooperative agreement number 17-C-98795/1-03, entitled "A National Study of Resource-Based Relative Value Scales for Physician Services."

(iii) the time required, and risk involved, in furnishing different services.

(3) The Secretary shall complete the development of the relative value scale under this section, and report to Congress on the development, not later than July 1, 1989. The report shall include the recommendations for the application of the scale to payment for physicians' services furnished under this part after December 31, 1989.

(4)(A) In making recommendations with respect to the application of the relative value scale for the purposes of establishing a fee schedule, the Secretary shall

(i) develop and assess an appropriate index to be used for making adjustments to reflect justifiable differences in the costs of practice and costs of living based upon geographic location without exacerbating the geographic maldistribution of physicians, and

(ii) assess the advisability and feasibility of developing an appropriate adjustment to assist in attracting and retaining physicians in medically underserved areas."

What is an RVS? An RVS is a set of numerical values, one for each service that physicians or other medical care providers may provide. These numerical values reflect the relative "valuation" of each service. The valuation can be determined in many ways -- current charges; consensus among physicians, or consensus between payer and providers, or consensus among patients; unilaterally, set by payer; or resources used in the provision of the service. An RVS based on resource use is termed an RBRVS. By itself, an RVS does not set payment; the relative values are multiplied by a monetary conversion factor (e.g., $10 per unit) to turn the RVS into a fee schedule.

Background. Since Medicare began, the Supplementary Medical Insurance program (Part B) has paid physicians using a fee-for-service system called "customary, prevailing, and reasonable (CPR)." (Appendix A describes the CPR system in detail.) Under CPR, physician payments are based upon physicians' actual charges to the Medicare program. Most observers agree that CPR has provided access to physician care and has provided increasing financial protection for the Medicare beneficiary. On the other hand, critics have argued that CPR has been less successful by other criteria, i.e., fees, volume and intensity of services, and overall expenditures increased significantly in the last decade. While critics argue that particular characteristics of CPR may exacerbate inflationary problems, the basic contributing factors to expenditure growth are inherent in any fee-for-service payment system. Between 1975 and 1987, Medicare's Part B expenditures per enrollee grew at an annual rate of 15.0 percent, while per capita Gross National Product grew at only 7.9 percent. Attempts to slow the growth of Medicare expenditures have included the imposition of the Medicare Economic Index, instituted in 1973 to limit the rate of increase in allowed charges for Medicare services, a fee freeze, a fee schedule for radiological procedures, and reductions in payment for

certain overpriced surgical procedures. Critics argue that these efforts, however, have not solved the problem of inefficient prices for Part B services or the problem of growth in volume and intensity of services.

There are additional concerns about the current Medicare payment system. Complaints have been made that patients, providers, and payers perceive that the system is overly complex. Some contend that any simplification of the system could be an important goal of any reform, because it would result in better understanding on the part of beneficiaries and providers. Critics also point to differences in payments (relative to physicians' time) between technological and evaluation and management services. Critics of CPR argue this payment differential is an inefficient way of expending Medicare funds, discourages primary care, and is unfair to physicians in certain specialties. While these variations exist, the policy implications are less clear. There is no evidence to support a claim that access to evaluation and management services has been adversely affected by the observed differences in payments. Indeed, Medicare beneficiaries generally have excellent access to care, with the exception of certain isolated rural areas which suffer from chronic physician shortages. The shortages in these areas generally affect Medicare and non-Medicare patients alike and appear to be the result of a variety of social and economic factors that are not specifically related to the level of Medicare payments.

The argument that CPR payments are inefficient is that higher payments for technological procedures may create incentives both for doing an unnecessary number of these procedures and for possibly paying more for these procedures than is necessary to secure access to care for Medicare beneficiaries. The argument of unfairness to physicians is that equity implies that physicians receive payments that are proportional to the value of their inputs. Critics argue that, under the current system, this is not the case. Finally, traditional criticism of CPR argues that it, like any fee-for-service system, is inflationary because of the strong incentive to provide greater quantities of those services that are better compensated.

Many of the criticisms of CPR are plausible, but there has been little empirical work performed that either substantiates or refutes them.

The primary goal of the Medicare program is to efficiently provide access to medically necessary and effective services for beneficiaries. There are a number of ways that Medicare payments for physician services can be reformed. Some are in the context of fee-for-service and some are not. The alternative methods include fee schedules, physician diagnosis related groups, capitation, preferred provider organizations, other managed care arrangements, and competitive bidding. RVSs, including the Harvard RBRVS, are just one of the many possible ways to establish fee schedules; and fee schedules are just one of the many options in reforming Medicare physician payment.

Fee schedules have frequently been considered as an alternative to CPR as a way to establish payment rates for physician services. An RBRVS might be used in two general ways for payment reform or refinement. It could be used to identify overpriced procedures or it could be used as a

basis for establishing fee schedules for all Medicare physicians' services.

Proponents of the Harvard RBRVS argue that it can contribute to two major goals: (1) make payments more efficient (e.g., more accurately reflecting competitive market prices), (2) make payments more equitable (equal pay for equal work, ceteris paribus). Plausible theoretical could be made supporting or refuting these claims. Again, there is no empirical evidence on these issues.

First, proponents argue that the RBRVS may be able to address both the equity and efficiency issues by revaluing procedures relative to their resource inputs. The Harvard team has hypothesized that the Harvard RBRVS, if adequately constructed, would equalize incentives across procedures. On the basis of revenues, physicians would be financially neutral in choosing procedures. Advocates believe that the Harvard RBRVS might result in more appropriate care, and thus better health, for the Medicare beneficiary. Second, these advocates believe that it can provide a tool for simplifying the payment system. Third, the Harvard RBRVS may be useful for other payers and managed health care systems for internal management purposes.

Like any other fee-for-service system, including CPR, no RBRVS-based fee schedule can address the growth in volume and intensity of services that has been the main component in the increase in Medicare expenditures. Thus, even if the Harvard RBRVS were complete and technically appropriate, it would not necessarily be an appropriate instrument, by itself, for reducing Medicare expenditures for physician services. To a large extent, the impact of the Harvard RBRVS-based fee schedule in terms of program costs, changes in the mix of services, and beneficiary access to care will depend on the behavioral response of physicians to these changes. Furthermore, in considering using any fee schedule, there are a number of policy issues that would have to be addressed explicitly.[2]

In assessing the Harvard RBRVS, the economic rationale for the scale must be considered. In a perfectly competitive market with perfect information and no barriers to entry, the market clearing price is determined by both the cost of production and the demand for the product. The interaction of supply and demand in creating relative prices is omitted in the Harvard RBRVS. As such, the RBRVS does not reflect the benefits of, or the value that patients attach to, particular services. Because the scale ignores this issue as well as other issues such as the physician's willingness to supply services, it does not necessarily get Medicare payments any closer to optimal economic prices than those that currently exist. Some would argue that current payments more accurately reflect the market for medical services.

---

[2]In addition to issues that will be discussed in Chapters 3 and 4, issues are also discussed in the report to Congress, entitled "National Fee Schedule Implementation."

In analyzing the applicability of any RVS, it is important to consider that Medicare represents approximately 20 percent of spending for physician services. According to data published in Medical Economics (Paxton, 1987), among specialties, it ranges from a high of 42 percent for ophthalmology to a low of 2 percent for pediatrics. This comparatively small market share may limit Medicare's ability to unilaterally impose major change on physician payment.

Most private insurers use reimbursement methods that are similar to CPR. As a result of this similarity, Medicare payments tend to parallel those of other payers, though with a deeper discount. The resulting absence of sharp disparities between Medicare and non-Medicare payments increases the willingness of physicians to treat Medicare patients. If Medicare were to adopt RBRVS-based payment and other insurers were to retain CPR-type systems, sharp disparities between Medicare and non-Medicare payments could result and this, in turn, could compromise access to care.

History of RVSs.[3] RVSs are not new. In 1956, the California Medical Association published the first edition of what became the California Relative Value Studies (CRVS). The purpose of these studies was to facilitate the construction of physicians' fee schedules. There were subsequent editions published in 1957, 1960, 1964, 1969, and 1974. In all editions of the CRVS, physicians charges were the basis for unit values. From 1956 through 1964, charge data were collected by a survey of California physicians, under the auspices of the California Committee on Fees. The Committee determined the relative values based upon the modal and median values for each procedure. Beginning with the 1969 edition, the Committee used the median charges reported by the California Blue Shield plan to derive the unit values.

The influence of the CRVS on fee scales for physician services nationwide was reported in a 1979 Senate Governmental Affairs Committee report (Committee on Governmental Affairs, 1979). This report showed that the CRVS was used by a large number of State medical societies and specialty societies. To date, the CRVS has been the basis for RVSs established by more than 40 State medical societies. Ten States have used CRVS-based fee schedules for their Medicaid programs. Third party payers, including Blue Cross/Blue Shield, have also used the CRVS to establish fee schedules. Other variations of RVSs have been used by Medicare carriers. HCFA has directed all Medicare carriers to develop charge-based RVSs to fill in gaps in customary and prevailing charge screens. The most recent charge-based RVS is the 1986 Florida RVS.

There are major concerns, however, that RVSs developed by physician groups may be anti-competitive. By the mid-1970s actions initiated by the Federal Trade Commission (FTC) slowed the development of relative value studies. In 1977, the California Medical Association was advised by legal counsel to enter into a consent agreement with the FTC, at which time it

---

[3]Much of this section is adapted from the Harvard RBRVS final report, Chapter 2.

ceased the distribution and development of its RVS. Other specialty societies entered into similar agreements.

Alternative Methods of Constructing an RVS. An RVS can be developed in any of several ways and can be based upon a number of factors including physicians' charges, consumers' willingness to pay, physicians' assessment of worth of the procedure, benefits to society, shadow prices (i.e., the prices that would result in a perfectly competitive market), and negotiation. The goal of any of these RVSs would be to determine some "appropriate" set of relative prices and to use these values for Medicare physicians' payment purposes. While there are these other potential methods for deriving RVSs, the discussion of these other approaches, with the exception of a charge-based RVS, is omitted from this report either because they have not been performed or they have not been evaluated.

Charge-Based RVS. Most RVSs that have been developed have used relative charges as the basis for relative values. The primary motivations for using charges as the basis for an RVS are intuitively appealing:

- One motivation is that almost all the data needed to create relative values for payment of physicians under Medicare currently exist. Thus, to create relative values across services, one need merely compare current charges for any given procedure to charges for a reference procedure and compare these relative values across procedures. While construction of an RVS based on physician work, as the Harvard team has done, involves deriving work estimates either by survey estimation or by extrapolation, creation of a charge-based RVS involves almost none of the statistical assumptions and manipulations.

- A second motivation is that the payment system would be very similar to the current system. Payments would be based upon values derived from CPR. As such, there would be a strong element of continuity and less risk of serious disruption to providers or beneficiaries than under RVS schemes.

- To the extent that the market for physician services reflects competitive market conditions, prices derived in this way would reflect efficient resource use. If the market prices are not egregiously distorted, then relative prices derived from prices could be a good place to start. If a relatively finite number of relative values are determined to be inappropriate so that the services are performed too often or infrequently, their relative values can be altered.[4]

Those who argue against the use of charges as the basis for an RVS note that because of insurance penetration the response of consumers to

---

[4]Research endorsing the use of charges as a basis for an RVS has been proposed by Hadley (1984), Hadley (1989), and Mitchell, Cromwell, Rosenbach, and Stason (1989).

changes in prices is severely decreased.[5] Thus, physicians have no motivation to constrain prices. This monopolistic behavior is exacerbated by the fact that, because of imperfect information in the market for medical services, physicians are not constrained to be price-takers. For these reasons, there is some reason to believe that observed prices that exist in the market are not optimal in an economic sense and may be a poor basis for an RVS.

Construction of a charge-based RVS is conceptually similar to the construction of any other RVS: relative value is defined as the value of any given service relative to a reference service, or numeraire. In a charge based scale, the value of a service is proxied by its price or charge. In the particular charge-based RVS that is used as a basis for simulations in Chapter 4, the national average submitted charge is used as the proxy for value for a given procedure. The national average charge across all services, weighted by frequency of performance, is used as the numeraire. The charge data used in the construction of the relative values are taken from the 1986 procedure file. Conceptually, relative values can be calculated on a specialty-specific basis for all procedures, on a specialty-specific basis for some procedures, or with no specialty differentials. The tables that are presented on the charge-based RVS assume no specialty differentials.

---

[5]Conversely, Hadley (1989) has argued that insurance penetration does not imply that relative values based on relative costs are closer to ideal than relative values based on relative fees. With or without insurance penetration, he argues that the result is indeterminate.

Chapter 2

CONSTRUCTION OF THE HARVARD RBRVS

As noted in the previous chapter, the vast majority of RVSs developed to date have been based upon charges. The majority of work basing relative values on physician inputs has involved Hsiao and his associates.

Hsiao and Stason (1979) first attempted to establish relative values based on physician resource inputs involved in the production of the services in the late 1970's. In this study, the authors assessed the relative resource input of 27 procedures commonly performed in five specialties (general surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, and urology). Physician work was calculated to be the product of time and complexity. Because time and complexity measures were correlated, the authors questioned whether physicians could hold time constant while providing estimates of complexity. They hypothesized that this overlap between time and complexity led to overestimated physician work values.

A second study of RBRVS was conducted by Hsiao and Braun et al. (1985) for the State of Massachusetts. This work expanded on the results of the previous study. It surveyed 110 physicians in Massachusetts and collected their estimates of work directly on a closed numeric scale of 1-100. Their study seemed to yield suspiciously low relative values for lengthy procedures and, in the opinion of physicians who served as technical consultants, unreasonable estimates for work. The Harvard RBRVS is built upon these earlier studies.

Methods. Hsiao and his colleagues set out to develop an RBRVS for 18 specialties by investigating the physician resource inputs to produce physicians' services. The specialties included in the study were: anesthesiology, family practice, general surgery, internal medicine, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, radiology, thoracic and cardiovascular surgery, urology, allergy and immunology, dermatology, oral/maxillofacial surgery, pediatrics, rheumatology, and psychiatry. To derive relative values, they developed a model that estimates three inputs to physicians' services. One input, work of the physician, is estimated on a service-specific basis. This input consists of time spent before ("pre-work"), during ("intrawork"), and after ("post-work") the service, and the intensity with which that time is spent. The two other resource inputs are practice costs and opportunity costs of training. These two factors are estimated on a specialty-specific basis and represent the costs of providing particular services in different specialties.

In constructing the Harvard RBRVS, the Harvard team spent most of its effort quantifying the amount of the physician's work in producing a service. All of the surveys, statistical manipulation, and extrapolation techniques were used to generate relative work values. Practice cost and

opportunity cost factors were generated using existing data. The three factors are combined in the following way to produce the RBRV for a given medical service:

$$RBRV=(TW)(1+RPC)(1+AST)$$

where TW is the total work input by the physician, RPC is an index of the relative specialty practice cost, and AST is an index of the relative amortized opportunity cost of specialty training. For the purpose of the construction of the Harvard RBRVS, total work was partioned into pre-service, intraservice, and post-service work. The intraservice work occurs during the actual performance of the procedure, and pre-service and post-service occur before and afterward. For bundles of procedures that are often reimbursed under Medicare globally, post-discharge visits are not included in the definition of post-service work.

The construction of the Harvard RBRVS was a multistep process. First, vignettes or descriptions of physicians' services were developed for 409 services, or approximately 23 services in each of the 18 specialties. In constructing the vignettes, the Harvard team attempted to ensure that (1) each service would be understood as essentially the same by colleagues in the specialty, and (2) the vignette describes average patient complexity for the service in question. These vignettes were assigned to the appropriate Current Procedural Terminology (CPT) codes, the procedure coding system used by HCFA and many physicians for billing purposes.

Then a national random sample of approximately 185 physicians in each of the 18 specialties, stratified by board certification status and region, was conducted for the selected services in each of the respective specialties. With the exceptions of allergy and immunology and rheumatology, which were not stratified on board certification, at least 70 percent of those surveyed were board certified. Given an expected response rate of 60 percent, the sample size was designed to yield 100 completed questionnaires in each of the specialties. The final number of usable questionnaires ranged from a high of 117 in anesthesiology, radiology and oral and maxillofacial surgery to a low of 89 in obstetrics and gynecology. In addition to gynecology, only ophthalmology (98) and thoracic and cardiovascular surgery (96) yielded fewer than 100 useful questionnaires.

Although 409 services were surveyed, the number of unique services was only 372. This was so because a number of services were surveyed in more than one specialty. Physicians were surveyed about their numerical judgments of work, time, and intensity which, in turn, consists of technical skill and physical effort, mental effort, and stress due to risk in the performance of the vignettes in question. With the exception of time, magnitude estimation was used to obtain measurements of intrawork and its dimensions relative to a reference standard in each specialty. Magnitude estimation is a technique that rates each dimension in relation to a reference service using a ratio scale rather than a cardinal or ordinal scale. Thus, if a reference service is assigned a value of 100 units of work, another procedure that requires 4.5 times as much work would be given a value of 450. In order to simplify the statistical analysis, all the measurements were converted to a logarithmic scale. This transformation resulted in survey result samples

that appeared to be normally distributed. This is a desirable statistical property because it allows the use of statistical procedures that are based on the assumption of normality.

The survey data were used to create scales of relative intraservice work for each of the specialties. Because these measures of work were obtained using different services as reference standards for the various specialties, they could not be directly compared to each other. The Harvard team convened panels of physicians to identify "link" procedures that were the same or equivalent in terms of work across specialties. These "linking" procedures are procedures that are performed by different specialties but were the same or equivalent in terms of intraservice work. The Harvard team aligned the work measurements for the various specialties to create a single scale. It did this by adjusting the scale for each specialty so that the linked procedures would have the same value for each specialty that performed them. This cross-specialty linkage procedure reduced the number of scales from 18 to 1 while keeping the relationships within the individual specialties unchanged. The resulting common scale ranked intraservice work for all surveyed procedures. This scale, however, did not include pre-service or post-service work, or practice and opportunity costs.

The next step was to derive estimates of pre-service and post-service work that could be added to the intraservice work values to yield total work values. Pre- and post-service time data were obtained for 153 of the 372 distinct services, and these survey results were used to generate estimates of pre- and post-service times for the remainder. Based upon intraservice data, and the available pre- and post-service time data, statistical methods and clinical guidance were then used to infer estimates of work per unit of time that could be mapped to pre-service and post-service work. These estimates of work per unit of time were assigned to pre-service and post-service times on the basis of assumptions about the relationship between pre- and post-service work per unit of time and intraservice work. Finally, pre-service and post-service work (i.e., intensity) were derived by multiplying the pre- and post-service time estimates by the assigned values of intensity. Adding these values to the intraservice work values created relative work values for all the surveyed procedures.

The next step was to derive estimates of work for the nonsurveyed procedures. Although the surveyed services accounted for approximately 35 percent of Medicare allowed charges for the included specialties, substantial gaps remained. There are approximately 7,000 services and procedures contained in CPT-4. Of these codes, a lesser number are used under Medicare with any frequency, and a smaller number is relevant to the specialties surveyed by the study team. Given resource constraints, it was not possible to survey vignettes for all CPT-4 codes. Thus, the study team developed relative values for nonsurveyed codes through other methods. The Harvard study collected primary intraservice work data on approximately 400 services representing somewhat fewer than 300 unique CPT-4 codes. These codes were used as a basis for extrapolation (Hsiao, Braun, Becker, et al., 1988, p. 610). Extrapolation was used to generate relative work values for a larger number of codes that were not surveyed.

Extrapolation was based on the assumption that, although charges are not a good surrogate for work across all services, they can be used as proxies for relative measures of work within small, fairly homogeneous groups of services. For example, they asserted that charges are a reasonable basis for estimating the differences in total work between the repair of an inguinal hernia, age 5 and over (49505), and the repair of an inguinal hernia, any age, recurrent (49520). The definition of the groups of services among which extrapolation was appropriate was based upon the hierarchical structure of the CPT-4 coding system. In total, the Harvard team defined approximately 150 families. These families averaged approximately eight members. Sources of charge data were the Health Insurance Association of America and Medicare Part B.

The extrapolation method was applicable for all specialties except anesthesiology. Difficulties in extrapolating to anesthesiology will be explained in Chapter 3. Similarly, the Harvard team determined that the extrapolation was not appropriate for visits and consults. As explained below, unreasonable extrapolated values for visit and consult codes led to modifying the method for deriving values for those codes.

The final two steps in the creation of the Harvard RBRVS were the incorporation of practice and opportunity costs.

-- The approach used in the creation of the practice cost adjustment was twofold. Practice costs were apportioned to each service in proportion to the total work estimated to be required to produce that service. By assumption, services that required more work also had proportionately more practice costs. The RPC index was constructed on a specialty-specific basis. The practice cost factor for each specialty was calculated from the ratio of practice costs to gross revenues in the specialties and then comparing these results to those for general surgery.[1] For most specialties, the RPC falls between -0.09 and 0.06. This implies that practice cost fall between 91 percent and 106 percent of practice costs for general surgery. For four of the 18 specialties, the number lies outside this range. The primary source of the data for this calculation was the HCFA/NORC 1983 Physicians' Practice Cost and Income Survey (NORC, 1983).

-- Finally, to reflect differences in the investment of different specialties in training, an index of the amortized value of the opportunity cost of specialty training was calculated relative to that for general surgery. The calculation was based on data obtained mainly from the American Medical Association (AMA) that yielded information on the length of residency training, residency salaries, and physician net income. The analysis showed that the relation of opportunity costs (foregone income) of post-graduate medical training varied little across specialties. Again, using the opportunity costs of general surgery as the reference group, the factors ranged from a high of 105 percent for thoracic and cardiovascular surgery to a low

---

[1]For a description of the elements that went into the measurement of practice costs, see Chapter 9 of the final report, pages 625-631 (Hsiao, Braun, and Becker et al., 1988).

of 99 percent for 8 of the 18 specialties covered in the study. Only three specialties, allergy and immunology, thoracic and cardiovascular surgery, and rheumatology, had opportunity cost more than 1 percent greater than general surgery.

Combining the relative work values with the practice cost and opportunity cost components using the functional form described earlier resulted in the final values of the Harvard RBRVS.

Major Results. The study showed that, using their definitions, there are large variations in resource inputs across services. There was roughly a 200-fold difference across the 1,400 services. Large variations existed both within and across specialties. Using 1986 Medicare mean charge data, ratios of charges to relative values for categories of service were also examined. The variation of this ratio across procedures can be used to indicate that a procedure is relatively underpaid or overpaid. The typical ratio for hospital-based invasive procedures was approximately 1.0, while the typical value for office visits was 0.3. This implies that invasive procedures are paid more than three times as much per RBRV unit as an office visit. This implies that, in terms of resources measured by this study, invasive procedures are overpaid relative to visits. To the extent that a number of these invasive services are billed on a global fee basis, and the Harvard RBRVS did not include all the components of the global fee, this relative overpayment is probably somewhat exaggerated.

Although invasive procedures appear to be paid more per RBRV unit, it does not imply that invasive procedures are overpaid in any normative sense, since there is not a "correct" ratio of relative value units to charges. If visits are paid appropriately, then invasive procedures are overpaid. Alternatively, if invasive procedures are paid appropriately, then visits are underpaid.

Nevertheless, based on the Harvard team's measurement of work, it is possible to determine if procedures are overpaid relative to current CPR payment amounts. To determine if a procedure is overpaid, it is necessary to calculate a payment amount per RBRV unit, calculate the payment amount for a given procedure under the Harvard RBRVS, and compare it to the current payment amount. Performance of such calculations is predicated on assumptions about how the Harvard RBRVS would be used for payment. The Harvard team has performed some calculations of this type. Their analysis tends to show that invasive procedures are overpaid. For example, in the summary of the study presented in the Journal of the American Medical Association (Hsiao, Braun, Kelly, Becker, 1988), the Harvard team reported that repair of an inguinal hernia is overpaid by 59 percent, and a modified radical mastectomy is overpaid by 35 percent. HCFA's estimates for selected services commonly performed under Medicare are presented in Chapter 4.

The Harvard team found, however, that there were substantial differences in the way physicians used the CPT codes for evaluation and management services. For example, intraservice time and intraservice work values estimated by rheumatologists for codes 90020 and 90050 are roughly twice those given by dermatologists for the same two codes. The use of billing codes also varied significantly within specialties. There

were instances where several surveyed vignettes fell under the same CPT code, and the work values differed greatly. Because of these problems, the researchers had great difficulty assigning reliable work values to visit and consult codes, even within specialties. This made extrapolation for these services even more problematic. The solution to this problem that was proposed by the research team was to modify the CPT codes by the addition of time descriptors and to assume that the work per unit of time did not vary across specialties and that total work for a service could be derived from estimates of intraservice time. The methodology for visits and consults utilzes survey data and regression techniques. The results for visits and consults presented in Appendix R to the final report (Hsiao, Braun, Becker et al., 1988) are based upon this revised methodology.

Extrapolation and the visit and consult methodology increased the total number of unique codes with relative work values to approximately 1,200 and the number of codes including modifiers to approximately 1,400. These approximately 1,400 relative values represent approximately 69 percent of Medicare allowed charges for the included specialties and approximately 67 percent of all Medicare allowed charges (see Table 2.1). The 67 percent of all allowed charges covered by the Harvard RBRVS may appear to be high, but it is not. The study generated estimates for procedures. If these procedures were also performed by the nonsurveyed specialties, then the dollar amount for these specialties could be calculated. These 1,400 values represented approximately 1,200 unique CPT codes. Table 2.2 shows the percentage of Medicare allowed charges covered by the RBRVS and the percentage derived by each technique. Approximately 25 percent of the allowed charges for the included specialties were derived from direct survey estimates, and another 25 percent were derived from the revised visit and consult methodology.

The Harvard team attempted to perform an external validation of its scale by comparing the Harvard RBRVS values to the Ontario fee schedule, which was negotiated with physicians. For both invasive and evaluation and management services, the Harvard RBRVS and the Ontario scale showed reasonable congruence.

Harvard has entered into a second cooperative agreement to extend this study to 14 additional specialties. Like the first study, this second study involving the additional specialties has been mandated by Congress. These specialties are cardiology, emergency medicine, gastroenterology, hematology and oncology, infectious disease, nephrology, neurology, neurosurgery, nuclear medicine, physical medicine and rehabilitation, plastic surgery, pulmonary medicine, radiation therapy, and osteopathy. One of the major goals of the second phase of the study is to expand the scope of the extrapolation so that 95 percent of all Medicare charges are covered by the study. Additional goals include covering all services from the 100 most frequently performed services under Medicare, and the inclusion of the top 100 high dollar volume services in each specialty. The final report of this cooperative agreement is due June 30, 1990. Copies of the final report of the first phase of the study can be obtained through the National Technical Information Service.

Table 2.1

PERCENTAGE OF 1987 ALLOWED CHARGES FOR PHYSICIAN SERVICES COVERED BY HARVARD RBRVS, BY SURVEYED AND UNSURVEYED SPECIALTY

	allowed /1 charges ($million)	covered by Harvard ($million)	percent
Total	$23,451	$15,824	67%
Surveyed Specialties:	17,457	12,124	69
Allergy	30	15	50
Anesthesiology	1,128	626	55
Dermatology	410	270	66
Family Practice	983	794	81
General Surgery	1,810	1,084	60
Gynecology	171	124	72
Internal Medicine	3,934	3,120	79
Ophthalmology	3,059	2,528	83
Orthopedic Surgery	1,247	744	60
Otorhinolaryngology	261	202	77
Pathology	274	139	51
Pediatrics	20	14	69
Psychiatry	324	104	32
Radiology	2,179	1,153	53
Thoracic Surgery	778	525	67
Urology	849	682	80
Unsurveyed Specialties:	5,994	3,700	62%
Cardiology	1,629	913	56
Gastroenterology	539	338	63
General Practice	990	721	73
Miscellaneous	106	46	43
Multi-spec Group	1,321	809	61
Nephrology	184	100	54
Neuro Surgery	208	112	54
Neurology	325	219	67
Osteopathy	85	51	60
Physical Medicine	101	67	67
Plastic Surgery	119	36	30
Proctology	53	41	77
Pulm Disease	325	243	75
Unknown	9	4	44

1/ Includes assistant at surgery.

NOTES: Excludes allowed charges for anesthesia performed by all specialties except for anesthesiologists, which were estimated using data from 1987 BMAD Beneficiary files. Excludes services covered by lab fee schedule.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1987 BMAD Procedure file and 1987 BMAD Beneficiary file.

Table 2.2

Percentage of 1987 Medicare Allowed Charges for Physicians' Services Accounted for by Harvard RBRVS

	ALLOWED CHARGES ($ BILLIONS)	PERCENT
All Physician Specialties	$23.4	100%
Surveyed Specialties	17.4	74
Non-Surveyed Specialties	6.0	26
SURVEYED SPECIALTIES	$17.4	100%
Covered by Harvard RBRVS	12.1	70
Not Covered by Harvard RBRVS	5.3	30
COVERED BY HARVARD RBRVS	$12.1	100%
Surveyed Codes (nonanesthesia)	3.9	32
Surveyed Codes (anesthesia)	0.6	5
Extrapolated Codes	2.7	22
Evaluation/Management Codes	4.3	36
Codes Resolved by Concensus Panel	0.6	5

NOTES: Excludes services covered under lab fee schedule, and services performed by limited license physicians. Includes assistant at surgery.

SOURCE: Health Care Financing Administration, BMAD Procedure File, 1987.

Chapter 3

CRITIQUE OF THE HARVARD RBRVS

The purpose of the Harvard RBRVS study was to create resource-based relative values that are comparable across specialties for most of the services delivered by 18 medical and surgical specialties. These values, in turn, could be considered for use as the basis for a revised payment system for physicians' services under Medicare.

HCFA extensively reviewed and analyzed the study and its results. In performing the analysis, HCFA consulted with experts in the fields of medicine, statistics, and economics, solicited comments from physician specialty groups, and conducted extensive simulations.

The Harvard team accomplished some of its major goals. First, it has shown that it is possible to use physician resource inputs, as measured by the study, to establish RVSs within specialties. Second, it has demonstrated that it is possible to align these specialty-specific scales to create a common scale and to create relative values that are meaningful across specialties. Overall, the Harvard study presents a richer view of the supply side of the physicians' services market than has previously been available. This is especially so in defining the concept of physician work and measuring it for a large number of procedures. In doing so, the Harvard RBRVS offers an alternative approach based upon physician resources for establishing relative values for physicians' services.

The Harvard RBRVS as it is currently constructed is not yet ready for full implementation. In addition to the obvious fact that the study only included 18 specialties, there are the problems inherent in the study itself. There are a number of methodological limitations that may affect the validity of the results and the precision of the results should be subjected to greater scrutiny. In addition, there are significant issues that would have to be resolved before the Harvard RBRVS could be fully implemented for Medicare payment purposes. Some of these problems appear to be solvable, although some resolution may require extensive resources.

This chapter critiques the Harvard RBRVS, discusses its appropriateness as a basis for Medicare payment, and discusses directions for further research and possible solutions to the problems inherent in the Harvard RBRVS.

This chapter is divided into two parts: the first part discusses limitations of the Harvard RBRVS; the second part discusses possible solutions to these shortcomings.

In reviewing an effort of this type, assessments must be made of the methodology and of the final results. The Harvard RBRVS incorporates assumptions, estimations, and extrapolations. In any statistical analysis, imprecision is an issue. Whether bias exists is unknown. Any impact of these factors on the final values cannot easily be assessed.

ISSUES

Economic Basis of the Harvard RBRVS. One motivation for the Harvard RBRVS is to devise a payment system that is more equitable and efficient, in the economic sense of equating payments to work and input costs rather than physician charges as under the current payment system. The market clearing price, the price where demand is equal to supply, is determined by both the cost of production and the demand for the product. Under such a pricing structure, services that were not valued by consumers would not be demanded and their price would be zero.

The interaction of supply and demand in creating market prices is omitted in the Harvard RBRVS. Because it focuses only on resource inputs, the Harvard RBRVS ignores the role of demand in determining price. As such, it does not reflect the benefits of, or the value that patients attach to, particular services. Thus, the market clearing price will not necessarily result from the Harvard RBRVS since relative values are based only on the relative average amount of resources expended in the production of a service. Finally, although the resources necessary to produce a service were measured, the physicians' willingness to supply the service were not included in the derivation of the relative values. Thus, while the scale measured relative work of physicians in producing services, it did not measure relative costs of producing services. This may have implications for access to Medicare services if payment amounts that would be generated from the Harvard RBRVS are too low to induce physicians to perform the service in question for Medicare beneficiaries. In evaluating the Harvard RBRVS from this perspective, a new set of relative values may not necessarily reflect movement toward the optimal competitive pricing structure.

Measurement of Intraservice Work. The Harvard team put most of its effort into estimating the amount of work that is expended by the physician during the actual performance of the service. The general methodological approach used to estimate intraservice work appears to be appropriate.

In designing the surveys used to estimate work, however, the Harvard team determined that the CPT-4 terminology was insufficiently detailed to define the level of effort associated with various services and procedures. Therefore, it developed vignettes that include information on patient characteristics, complaints, diagnoses, and treatments. The use of vignettes raises a number of issues:

1. Many of the study vignettes represent patients younger than 65. If the work for services for Medicare beneficiaries differs from that for the general population, these vignettes could yield distorted relative values for Medicare patients.

2. Some of the vignettes contained diagnostic information. Reaching a diagnosis often involves physician time and effort. Thus, a service may be undervalued if it is based on a vignette that includes a diagnosis.

3. Another problem involves the assignment of CPT-4 codes to the vignettes. During the course of the study, it became clear that there was some difficulty in assigning unique CPT-4 codes to the vignettes.

4. Another concern is whether the vignettes represent the average resources for the codes to which they are assigned. No analysis of this was performed by the Harvard team. If the vignettes are not representative of the codes, then the relative work values assigned to the codes will not be representative either. This concern is independent of the ability to assign CPT codes to the vignettes.

5. The coding of vignettes was especially difficult for visits; clinicians did not always agree on the code for a vignette, and two somewhat different vignettes might receive the same code. Moreover, the researchers also found that, for visits, different specialties used the coding system differently. For some codes, work values across specialties differed by factors of three or more (Hsiao, Braun, Becker et al., 1988, Table 98). In addition, a vignette classified as a limited office visit (90050) might receive a higher work rating than a service classified as an intermediate office visit in the same specialty (90060) (Hsiao, Braun, Becker et al., 1988, p.710). Furthermore, for codes that contained two or more surveyed vignettes, the work estimates could differ from each other by almost 50 percent (Hsiao, Braun, Becker et al., 1988, Table 99).

6. The problem of vignettes is exacerbated by the fact that there is great geographic variation in the way that the CPT-4 codes are used. The Office of Inspector General (OIG) report, entitled "Problems with Coding of Physician Services: Medicare Part B" (OIG, January 1989), found that one carrier had 86 percent of its established patient office visits coded as 90060, while another had 9 percent coded in this way. The average percent of this code reported by all carriers was 31 percent. Although these variations might reflect differences in services rendered, it is more likely that they reflect differences in coding practices for similar services. This does not imply that the Harvard study team measured intraservice work incorrectly. It reflects variations in the coding of the services by physicians. It does imply, however, that assigning CPT-4 codes to current vignettes is not a straightforward exercise.

These problems of assigning CPT-4 codes to the vignettes led the Harvard team to question its results for evaluation and management services and to attempt to devise new service definitions. Their proposed solution bases the coding of visits and consultations on the amount of time that could be "routinely scheduled" to perform them. For example, a code 90050 was defined as a service that is usually scheduled as a 15 minute visit. While this is an interesting idea, it is underdeveloped, and significant policy issues remain. Foremost is the difficulty of implementing the proposed change in a manner that provides for predictable budget effects. This difficulty arises because, although one can be developed, at present, there is no cross-walk between the current and

proposed coding for visits and consultations. Second, substantial upcoding may result. Other issues include: how to define and measure time and scheduled time, how to audit time, and how to ensure that slower and less efficient practices are not rewarded.

In its testimony to the Senate Committee on Finance presented on March 17, 1989, PPRC[1] recommended that time be included in the definition of visit codes. This issue is currently under consideration by the AMA Ad Hoc Committee on Visits and Levels of Service, to which HCFA has presented its views. The Department's policy perspective favors a reduction in the number of codes. The recommendations of the Ad Hoc Committee will be presented to the full CPT-4 Editorial Panel, on which HCFA is represented.

Another problem pertains to the measurement of work itself. In measuring physician work, each service is considered independently. The joint production of services and economies of scope is ignored in the study. This could imply that the sum of the work values for services that could be performed concurrently is greater than it should be. In defense of the Harvard RBRVS methodology, this is often a problem with the current payment system as well.

Updating Values for Work. The responses that physicians made to the survey were, to an extent, a function of the markets in which they provide services. Physicians who face less demand might take more time to perform a service than those who are busier, causing work values to change over time. The state of technology also influences the amount of work required to perform a procedure. These factors imply that the values of the Harvard RBRVS are not constant across physicians or over time. The Harvard RBRVS values will have to be updated periodically to incorporate both relative changes that evolve over time in the existing procedures and the advent of new procedures and technologies. It is not clear how frequent updating would have to be performed. Repeating the current methodology could be resource intensive, because it might entail activities such as convening panels of medical experts to identify changes in medical practice and resurveying physicians on a regular basis to recalculate work values. Extrapolating Harvard RBRVS values from charges to update the values will be even more difficult since physicians will have no incentive to report charges, unless Medicare customary charge screens are kept.

In addition to the cost of updating the Harvard RBRVS, it may be difficult to get accurate and unbiased survey results in the future. When the Harvard team first conducted physician surveys for the study, it was

---

[1]PPRC's recommendations on the Harvard RBRVS are presented in their entirety in its report, entitled "Physician Payment Review Commission Annual Report to Congress, 1989."

not universally known that the results might influence Medicare payments. Given the current interest in the Harvard RBRVS, however, physicians may have an incentive to respond in a manner that enhances their self-interests. This could undermine the validity of any subsequent surveying.

Magnitude Estimation. Magnitude estimation has been questioned as an appropriate technique for measuring physician responses. In particular, the technique may not be appropriate when the procedures used as the reference procedures in a specialty are not typical (see, for example, Stevens, 1975). Some specialties have argued that there is a bias due to the atypical choice of the standard for their particular specialties.

On the basis of inputs from consultants, HCFA concluded that these issues did not raise serious problems. The methodology is an accepted technique for obtaining subjective judgments. Magnitude estimation does not depend on the reference procedure being typical, but on the ability to rate procedures. Furthermore, analysis by HCFA of the work values of the surveyed procedures showed that the reference procedures were well within the range of values for all specialties except pathology. The experts also judged that the results were likely to be relatively insensitive to the choice of reference procedure.

Measurement of Pre-service and Post-service Work. The Harvard RBRVS research team reported that pre-service and post-service work represent, on average, 33 percent of total work for evaluation and management services and 46 percent of total work for invasive procedures. Clearly, pre- and post-service work represent a substantial proportion of total work. Because this proportion is so large, the implications of an invalid or imprecise methodology can be serious. No estimates of pre- or post-service work were obtained by survey. Estimates of pre- and post-service times, however, were obtained through survey for 153 services. Regression techniques were used to derive pre- and post-service time estimates for the remaining services that had been surveyed for intraservice values. The r-square for prediction models ranged from .44 to .85. Estimates for pre- and post-service work were obtained from intraservice work data and pre- and post-service time data based on the assumptions that pre- and post-service work are essentially evaluation and management, and that intensity (work per unit of time) for pre- and post-services is correlated with corresponding intraservice work. This second assumption facilitated the mapping of data on intraservice work to yield pre- and post-service intensity values. Multiplying these pre- and post-service intensity values by the corresponding time estimates resulted in the pre- and post-service work estimates.

This part of the study needs substantial refinement. Because the estimates for pre-service and post-service work were not obtained by survey, there are significant questions about the validity and reliability of these results. A second problem is the actual definition and estimation of pre- and post-service time. Pre- and post-service time is usually not formally scheduled and is highly variable according to

particular characteristics of the case. Furthermore, it could vary according to the practice style of the physician. Consequently, the validity and reliability of estimates may be questionable.

Cross-Specialty Linkages. In order to perform linkages across specialties, it was necessary to define procedures that were the same or equivalent in terms of work. The Harvard team has used statistical techniques to show that a similar final scale would have resulted if a subset of the linking procedures had been used. Some believe that the work across some specialty linking procedures is not equal.

Further questions involve whether another set of physicians would have identified the same link procedures. The use of different link procedures could result in a different common scale and relative values for the surveyed procedures. This is an important concern that warrants further analysis.

Practice Costs and Opportunity Costs. Practice costs represent approximately 45 percent of physicians' gross revenues and clearly represent a significant input into physician services. Relative values, and, hence, payments, can vary substantially based on the choice of allocation method. As a general matter of economic theory, however, there is no technically correct method for allocating overhead across multiple products.

In the context of the Harvard study, there are two issues in the way practice and opportunity costs are handled: the functional form used to combine them and the specific way practice costs are measured and allocated.

Functional Form. The Harvard RBRVS assumes that the resources that comprise the relative values enter the function multiplicatively. There are motivations for this functional form. The multiplicative functional form yields a one dimension RVS that results in relative payments that are independent of the conversion factor. Unfortunately, the multiplicative form does have a serious limitation. Because the functional form is multiplicative, any change in the value of work (i.e., the first component of the formula) will change practice costs attributed to the service in proportion to the change in work. This assumption implies that procedures that involve greater amounts of physician work input require higher levels of other inputs, as well. Thus, in this formula practice cost and work are not independent.

The multiplicative form has some other limitations that are related to the way that the RPC index is calculated. This index for a specialty is obtained, in part, by calculations based on the ratio of practice costs to gross revenue within a specialty and then standardizing that result by the result for general surgery. This approach will yield biased practice cost ratios and Harvard RBRVS values because this formula does not reflect the changes in gross revenue within the specialties that would occur after using the Harvard RBRVS for Medicare payment purposes.

As a way of illustration, imagine a specialty that performs only one service, and imagine further that payment for the service is reduced. If practice costs are essentially fixed, then the practice cost factor for the specialty should rise as gross revenues drop. The Harvard RBRVS value, however, is based on the lower practice cost factor that existed before using the Harvard RBRVS for payment purposes. Thus, not only does payment drop because of the lower work values, but an incorrect RPC is used, thereby further reducing the Harvard RBRVS. The overall result is to overstate the practice cost factors for specialties that have increased payments under the Harvard RBRVS-based payment system and to understate the practice cost ratios for those that have decreased payments. If used for a payment system, this would imply redistributing practice costs across specialties and will tend to overstate the redistributions across specialties caused by the Harvard RBRVS.

The Harvard team agrees that other ways of incorporating practice costs are possible (Hsiao, Braun, Becker, et al., 1988, p.636). One alternative is to enter the components of the RBRVS in an additive fashion. Use of an additive model divides total payment for a service into payment for work (or work multiplied by the opportunity cost factor) and payment for practice costs. Such a model allows the components of the relative values to affect the final values independently, instead of interactively. Thus, if practice costs are assumed to be fixed, and the dollar amount is determined to be appropriate, they can be separated from the relative work values and allocated independently. By separating payments into separate components, changes in payments for practice costs and changes in payments for physician work can be made independently without affecting the other components of the scale.

Clearly, elimination of the interaction would make updating easier. A serious limitation of an additive model is that it is predicated upon appropriately apportioning payments to work and practice costs. An additive model, as discussed in Chapter 4, also significantly reduces the redistribution across specialties since only 55 percent of the fee would be adjusted. A number of additive formulations are simulated in Chapter 4. Clearly, incorporating relative opportunity costs in a multiplicative fashion has the same problems as practice costs.

Measurement and Allocation of Practice Costs. In addition to the implications of the multiplicative functional form, there are several other problems pertaining to the measurement and allocation of practice costs:

- Some procedures, especially those that have technical components and those carrying high malpractice risk, clearly have different overhead from others. This is contrary to the assumption that practice costs are proportional to work on a specialty rather than procedure-specific basis.

- Malpractice raises other concerns. Data presented in the Harvard final report (Table 84, pp. 640-641) obtained from the 1983 NORC Physicians' Practice Cost and Income Survey show that malpractice

ranges from a low of 1.9 percent of gross revenue for rheumatology to a high of 11.3 percent for obstetrics and gynecology. Although this was not the sole source of data on malpractice costs that were used by the Harvard team, it does show that malpractice costs can be a significant factor. Given the significant proportion of gross revenue allocated to malpractice premiums, special attention may need to be given to this area.

- The model does not differentiate practice costs according to site of service. For example, it might be argued that malpractice costs are primarily associated with procedures performed in hospitals.

Allocation of practice costs is an area of concern. It appears that there is no one theoretically appropriate way to allocate practice costs and that choice of any particular method may be somewhat arbitrary. Clearly, alternative methods can have serious implications for the relative values for the procedures in question. Additionally, selection of a particular method to define, measure, and allocate practice costs could ultimately impact physician behavior and practice style. The model proposed by the Harvard team allocates practice costs according to work. Additive models can separate payment amounts into payments for work and payments for practice costs, but the allocation issues remain. It appears that a paradigm for allocation will have to be responsive to policy decisions.

By using a single adjustment figure for each specialty, different relative values for different specialties performing identical services are produced. This implies that two specialties performing the same work will be paid different amounts because the practice cost factors differ. A formula that allocates practice cost differences to the services that differ appears more appropriate.

Updating Practice Costs. As they are measured in the Harvard RBRVS, practice costs are measured relative to gross income. Since the Harvard RBRVS may change the distribution of physicians' income, it will also give the appearance of altering the distribution of practice costs across specialties when, in reality, practice costs may not have changed. This approach will give misleading results about the change in practice costs over time. Further work needs to be done to determine how practice costs should be updated.

Specialty Differentials. Whether there should be specialty differentials is an important issue for the Medicare program. A part of this issue is whether different specialties are actually providing equivalent work when they use the same CPT-4 codes and report equal work. For example, the Harvard RBRVS may yield the same relative work value for a specialist and a nonspecialist. Whether equal payments are appropriate is unclear. The ultimate decision might be influenced by whether the services are likely to be equally beneficial to the patient.

Whether Medicare should pay for the opportunity costs of training is part of this issue. Arguments can be made on both sides of the issue. It could be argued that Medicare should not pay more than is appropriate for the least cost or most efficient specialty. On the other hand, failure to compensate for opportunity cost could discourage training in specialties with lengthy residency requirements.

The issue of specialty differentials raises another issue for Medicare payment. The present system allows self-designation of specialties. If there are different payments across specialties, physicians will have an incentive to identify themselves as members of the higher paying specialties.

Extrapolation. Given resource constraints, it was not possible to survey vignettes for all CPT-4 codes. Extrapolation (and the visit and consult methodology) increased the total number of unique codes with relative work values to approximately 1,200 and the number of codes including modifiers to approximately 1,400. Surveyed codes account for more than 30 percent of allowed charges for the included specialties. The extrapolated codes account for more than 20 percent and the visit code methodology accounts for more than 35 percent.

The extrapolation methodology is predicated on the assumption that charges accurately reflect differences in work within small families. Extrapolation within families is based on the assumption that differences in charges within families reflect the relative differences in work. To the extent that there are procedures that are mispriced within families relative to other family members, the extrapolation technique has its limitations. The Harvard team performed some sensitivity analyses on families that included more than one surveyed procedure. They found that the relative values differed by approximately 10 percent depending on the choice of the benchmark procedure in one family, and nearly 50 percent in another. The typical variation within a family is unknown, but may be large.

Work by others (Mitchell et al., 1988) supports the underlying assumption of the extrapolation methodology that charges vary systematically with physician effort involved. This work, however, also identified the presence of procedures that were mispriced in terms of physician effort. For example, Mitchell found that total hip replacements were overpriced while secondary hip revisions were appropriately priced.

The Harvard team ran into trouble using national average charges: some of the relative charges were unexpected and even perverse. For example, the Harvard team found that the average charge for a six vessel coronary artery bypass graft (CABG) is lower than the average charges for a three vessel or four vessel CABG (Hsiao, Braun, Becker et al., 1988, p. 605). Since the three vessel CABG was the benchmark for CABG extrapolations, the resulting relative value for the six vessel CABG was unreasonable. The

problems that can exist in attempting to extrapolate from charge data are well known. While to some extent they reflect problems with the data, to a large extent, they also reflect problems in the way that the data were employed by the Harvard team. Thus, although some of these problems can be solved with more careful data analysis, the results illustrate the sensitivity and risks of the extrapolation technique.

The Harvard researchers have acknowledged these limitations. For example, although the study reported values for radiology procedures, they are identified as "unresolved." In addition, extrapolated values have not been generated for anesthesia procedures. Finally, there are some procedures that are not members of a family. For these, extrapolation is highly problematic. To date, no general solution to these problems has been proposed.

Global Fees. Global fees are fees, generally surgical, that include services from some time before the procedure itself is performed until some time afterward. For instance, most surgical procedures, for the purpose of billing, include the operation, per se, and the normal, uncomplicated follow-up care. A global fee usually comprises these various components. Surgeons almost universally bill global fees and Medicare pays global fees for surgical procedures. These global fees almost always include a period after discharge although the time period included in a global fee payment varies across carriers.

Global fees pose a significant problem in both the calculated and extrapolated Harvard RBRVS for surgical procedures. The Harvard RBRVS study did not collect information on work for globally billed surgical procedures that occurred after hospital discharge. Since the study did not include post-discharge work in the calculation of relative values for surgical procedures, the estimates of work for these procedures are undervalued in the Harvard RBRVS.

If the Harvard RBRVS is to be used as a basis for a fee schedule, it would be imperative that global fees be defined uniformly across carriers. As with visits, it is clear that precise relative values cannot be computed for operation codes as now used because the contents of these codes vary from carrier to carrier. Clearly, conforming the Harvard RBRVS to a uniform global fee definition will be complex and should be done carefully if an RBRVS is adopted.

If global fee packages are defined uniformly, assignment of relative values may be less of a problem since the number of packages that would have to be defined would be less than is currently the case. The Harvard team has proposed that the relative value for a number of office visits could be used to generate a global fee under the Harvard RBRVS. This apparently straightforward solution is not without its limitations. Determining the appropriate level and frequency of visits may be difficult, resulting in inappropriate estimates. In addition, if it is not done for all global fees, gap filling methods may be necessary. The present inconsistency of definition among Medicare carriers, however, makes resolution to the global fee problem difficult.

Professional versus Technical Components. Most radiology and anatomic pathology procedures, and some diagnostic procedures, have both a technical and professional component. Medicare pays for both, but in different ways. This may have made the assigning of CPT codes to vignettes more difficult for radiology. For radiology and pathology procedures, a modifier to the code is used to designate its professional component. For diagnostic tests, separate codes are often used to differentiate between the professional and technical components and the global procedure.

For physician pathology services, some carriers have separate screens for global services and for professional only services. Other carriers have only one set of screens on the premise that physician pathology services are nearly all professional services and the technical component is negligible.

A number of questions arise with respect to the way the Harvard RBRVS study treated the differentiation between these two types of work in radiology. First, it is not clear whether the physicians responded to the survey only with the professional components of work or included both technical and professional components. While at the beginning of the survey instrument the physician respondents were instructed to report only their own work, it is not clear that this instruction was consistently heeded. The professional component of a radiology procedure would be "interpretation only." Even if the procedure is performed in the physician's office, where the physician bills for the technical component, the staff generally performs the technical component. If physicians did not respond appropriately and included the total work of all persons involved in the procedure, then systematic biases of physician work would occur. Some survey respondents appear to have incorrectly provided time estimates for both components. Thus, there is some belief that the problem may also exist for the measurements of work.

In addition, if the survey data on services that involve both professional and technical components are invalid, then extrapolations based on these data will also be incorrect. There are further problems in using the charge data for extrapolation. Coding across carriers for radiological procedures is not uniform, and there is some indication that the modifier for the professional component is underreported on the Part B Medicare Annual Data System (BMAD) file. HCFA has found that many carriers do not code the professional modifier for inpatient radiology procedures on BMAD, although Medicare pays only for the professional component of that service. This would result in a low relative value for the total radiological procedure, since the observed relationships between the professional and total charges for these procedures would be implausibly low.

Payment for Anesthesia. The Harvard team did not generate extrapolated values for anesthesia services. First, the Harvard team used CPT-4 coding

for anesthesiology services, but in the data that it used, HCFA coded and paid for these procedures using a modifier to surgical codes.[2] To apply the Harvard RBRVS for payment purposes in a budget neutral fashion or to determine its impact on anesthesia payments thus requires a cross-walk from the Harvard RBRVS values to the CPT-4 values so that the frequencies of the CPT-4 codes can be determined. Second, the frequency field of the BMAD file has been used differently by the various carriers. Thus, they claim that it is very difficult to determine the national frequency of anesthesia procedures.

In reality, it would have been possible for the Harvard team to develop extrapolated relative values for anesthesia codes. First, cross-walks between surgery codes to anesthesia codes exist. Second, by using the BMAD beneficiary data, it would have been possible to obtain frequencies of anesthesia services. Thus, although extrapolated anesthesia relative values do not exist, this is a problem that can be addressed.

Payment for Pathology. The Harvard study generated relative values for pathology services. A number of these pathology services, such as urinalysis, do not qualify for Medicare payment as physicians' services. These are paid by Medicare under a clinical fee schedule because they require no physician work. As such, they should not be included in the Harvard RBRVS and raise questions as to what the responses mean for those services.

Modifiers. A large number of codes can have modifiers appended to them. In all, the CPT-4 coding system has 22 and the Medicare system has assigned approximately 30 more level II codes. Some of the modifiers are descriptive while others are for payment purposes. Modifiers that are merely descriptive and do not affect payment do not present a problem for Medicare or the Harvard RBRVS. Other CPT-4 modifiers, such as assistants at surgery, concurrent care, bilateral service, and unusual services, present problems. The Harvard RBRVS study has attempted to deal with only one, the modifier for the professional component of a service. It is not clear that the extrapolation technique would work well for these modified codes because of the joint nature of service. Because some modifiers are used for payment purposes while others are only descriptors, it is very difficult to determine the dollar amount of Medicare services that incorporate payment modifiers. Nevertheless, it probably is not insignificant. The issue of modifiers needs further study.

Fitness to Rate. Other researchers have concluded that the ability of physicians to give valid responses to surveys is compromised if the physicians do not perform the procedure in question. In their study on

---

[2]Prior to March 1, 1989, HCFA used modifiers to surgery codes for anesthesia coding. After that date, HCFA used CPT-4 anesthesia codes.

overpriced procedures, Mitchell et al. concluded that those who performed a procedure frequently had a much lower rate of statistical outliers than those who performed the procedures less frequently. The Harvard RBRVS study did not query the physicians as to how frequently they performed the surveyed procedures.

Validity of the Harvard RBRVS Values. There has been relatively little review of the full validity of the Harvard RBRVS values. There have been observations that some of the relative values within the specialties are inappropriate. But aside from concerns raised by the specialty societies, HCFA is aware of no independent attempts by independent reviewers to assess the validity of the final results.

Nevertheless, there has been some review of the time measurements obtained by the Harvard study team. In performing the study on overpriced procedures cited above, Mitchell et al. collected intraservice times on procedures involved in their study. There were approximately 55 codes that were common to both studies. In reviewing these codes, Mitchell (1989) found that, for the most part, the times are remarkably similar.

ADDRESSING THE ISSUES AND LIMITATIONS OF THE HARVARD RBRVS

Some of the problems identified above might be corrected in a straightforward fashion, but others will be expensive and time consuming. While some of these problems might be solved by the Harvard team, others will be investigated by HCFA and other organizations. In working to resolve the shortcomings of the Harvard RBRVS, two purposes will be satisfied. First, refinement should improve the usefulness of the final scale. Second, the sensitivity of the results to these refinements can be investigated. The success of efforts to resolve the problems that have been identified cannot be predicted since it is work in progress.

Many of the concerns about the vignettes might be resolved by more survey work and greater emphasis on validity testing. In the second phase of the study, the Harvard team will resurvey general surgery, orthopedics, and internal medicine. In performing these resurveys, by including more vignettes specifically relevant to the Medicare population and comparing results to vignettes that are not Medicare specific, they should be able to determine if the vignettes used in the study are appropriate for the Medicare population. The Harvard team may organize panels of physicians to rate work in a group process. This group process will be conducted parallel to the survey process and can be used to validate the survey data.

Some coding problems might be corrected by defining different codes. PPRC has recommended that the coding system for evaluation and management services be revised so that time is used in the definitions of levels of service. Nonetheless, such an effort would have to be coordinated with HCFA's efforts to update the payment system and with the concerns of other parties to find a viable approach to problems with the coding system. The

solution that the Harvard team has proposed to the visit code problem is under consideration by the AMA, PPRC, and HCFA. Clearly, many details need to be resolved.

Global fees is another area that needs substantial work. In defining global fee packages, it is important that broad definitions including long lengths of time after discharge be used. Further study is necessary to define the amount of work involved in post-discharge visits.

Other problems such as technical components may require a combination of more survey work and definition.

Problems with payment for anesthesiology apparently can be resolved. As stated earlier, more judicious use of existing data may be the best solution to the problem. As an alternative, consideration might be given to the current payment for anesthesioloy. Medicare currently pays for anesthesiology services using a relative value system based on the system developed by the American Society of Anesthesiologists (ASA). One option for payment for these services would be to use relative values developed by the ASA and integrate them into the Harvard RBRVS by a consensus process. Alternatively, Medicare might change anesthesia payments to an average time per procedure basis.

Measurement of the technical components of procedures is an area that needs greater study. The American College of Radiologists (ACR) has developed relative values for professional components for all radiology procedures. In additional to using its fee schedule for professional components of radiological procedures, HCFA obtained global relative value recommendations from ACR. A possible alternative is to use the College's global values to establish technical relative values for radiological procedures. Another alternative is to perform studies to determine the correct relationship between professional and technical components.

Payment for professional and technical components for physician pathology services and other diagnostic services may be more troublesome, but not as important in the overall perspective of Medicare financing, because physician pathology services involve a very small number of CPT-4 codes, currently about 60. Also, in situations where the pathology service is rendered to a hospital patient by a hospital-based pathologist--about 75 percent of all physician pathology services--the technical component is paid to the facility through the prospective payment system or on a cost basis. When the service is performed by an independent laboratory, a global billing is paid by the carrier. Carriers do not maintain screens nor pay claims for technical component billings for physician pathology services. A short-run solution to this problem is to use charges to extrapolate relative values, as Harvard has done. One alternative is to use the relative value scale for physician pathology services that was developed by HCFA and integrate it into the Harvard

RBRVS.[3] Another alternative would be to attempt to perform studies to determine the correct relationship between professional and technical components in this area, including developing a separate methodology for these services.

Other options for the functional form are being considered by both HCFA and PPRC. PPRC has proposed that an additive functional form be used, where payment is separated into work and practice cost components. It proposed further that the opportunity cost factor should be dropped from the formula. The use of an additive model is one alternative approach, and many alternative formulations of the additive model are plausible.

Functional form and allocation and measurement of practice costs and updating of these factors are being studied by HCFA. PPRC has recommended that the process used to develop its fee schedule should be used for updating it as well. Under its proposed process, Congress would set policy regarding updates in the conversion factor, changes in relative values, and adjustments to the schedule. The Commission would continue to provide the Congress with necessary data for update decisions. The desirability of paying for opportunity costs will continue to be debated, as will be the specialty differentials.

Extrapolation is another area that requires work in several directions. A partial solution toward solving the problem includes surveying more vignettes, especially those with high Medicare frequencies or expenditures. This would facilitate a shrinking of the scope of the extrapolation. Other efforts to be undertaken by the Harvard team will include investigating alternative methods of extrapolation. Finally, a greater emphasis on validity testing of the extrapolated results will be made in the second phase of the study.

The Harvard team will attempt to develop new methods of selecting cross-specialty links and of validating the cross-specialty results. Two new methods will be the use of a panel composed of salaried physicians, as well as double-boarded specialists.

Pre- and post-service work make up a large part of total work, and issues related to this area of research were previously discussed. The Harvard team proposes to attempt to investigate different methods of measuring pre- and post-service time and work. Methods it will explore

---

[3]This relative value scale is based upon 1987 BMAD submitted charges. The scale does not differentiate between professional and global components of physician pathology services. For a more complete discussion of physician pathology issues, see the Secretary's report to Congress, entitled "A Relative Value Scale for Physician Pathology Services." This report is currently in Departmental clearance.

include use of physician logs, surveys, and consensus by expert panels. In addition, greater validity checks will be done in this area.

The second phase of the study will examine the reliability and validity of work values provided by panels of physicians meeting face-to-face as opposed to telephone surveys. If the results of the surveys and panels are similar, then updating may be easier than feared.

The problems of modifiers may be resolved with greater data collection. The Harvard team is investigating the possibility of addressing the issue of assistants at surgery in the next phase of the study. Other modifiers will require detailed analysis, as well. In the short-run, there are two possible solutions. In the report to Congress entitled "National Fee Schedule Implementation" that has been cited earlier, the Department has recommended that many of the current payment rules should be used to calculate relative values. For example, under the current charge policy, the reasonable charge of the assistant at surgery may not exceed 20 percent of the prevailing charge for the surgical procedure. Similar rules exist for multiple and bilateral surgery. A less satisfactory solution is to use the current extrapolated values. The problem with local codes should disappear as carriers convert more universally to the HCFA Common Procedure Coding System.

At present, the Harvard RBRVS covers only 69 percent of allowed charges for the covered specialties. As noted in Chapter 2, when the Harvard RBRVS is completed, it is expected that 95 percent of Medicare charges will be covered. If the Harvard RBRVS is to be used as a basis for a Medicare physician payment system, provisions for payment must be made for codes that do not have relative values. There are three feasible solutions to this problem. One option is to pay for these procedures on a reasonable charge basis. A second option is to have the carriers create their own local relative values. A third option is to determine claims on a case-by case basis. In any event, the problem can and should be solved before the Harvard RBRVS can be used as a basis for a fee schedule.

In conclusion, the Harvard RBRVS developed by the Harvard team is an important, professional, and ambitious effort. Nevertheless, methodological issues remain. Decisions on how the Harvard RBRVS would be used by Medicare hinge on its technical validity and on the implications of its use for providers, beneficiaries, and the Medicare program. These latter issues are the subject of the following chapter.

Chapter 4

ANALYSIS OF THE IMPACT OF USING AN RVS FOR MEDICARE PAYMENT

This chapter examines the economic impact of using an RVS-based fee schedule to determine Medicare payments, focusing on an RBRVS and a charge-based RVS. The chapter describes:

1. the design issues involved in simulating a payment system based on an RVS and an explanation of the options used for the simulation,

2. the simulation methods, and

3. the results of the simulations.

DESIGN ISSUES AND OPTIONS

A large number of technical issues would have to be resolved before an RBRVS-based payment system could be implemented, but only a few of them must be resolved in order to perform a reasonably accurate simulation of the impact of such a system on providers and beneficiaries. The nine important issues are:

1. Should the system be implemented in a "budget-neutral" way or should conversion factors be used that would ensure budget savings?

2. What kind of model (e.g., additive or multiplicative) should be used to convert estimated work and practice costs into an allowed charge?

3. How, if at all, should the system adjust payments to reflect appropriate differences in cost of practice among geographic areas?

4. What redistributions of allowed charges, if any, are acceptable among geographic areas?

5. What redistributions of allowed charges, if any, are acceptable among specialties?

6. What changes in volume and intensity of services should be expected in response to changes in allowed charges?

7. What rules, if any, will be applied to balance billing and assignment?

8. Will the fee determined by the RVS be paid in all cases, or will the allowed charge be limited to the physician's actual or customary charge?

9. How will assignment and participation rates change?

Different payment systems based on an RVS can have very different impacts, ranging from major redistribution of payments among specialties and geographic areas to no redistribution at all. Designing a national payment system based on an RVS requires explicitly deciding whether to preserve or change important features of the current CPR system. We have already noted that those interested in eliminating the perceived allowed charge imbalance between cognitive and invasive services look to the implementation of an RBRVS to achieve this goal. In addition, many would like to use implementation of an RBRVS to increase payments to rural physicians. For this reason we have simulated a variety of payment systems with widely varying redistributional effects.

1. Conversion Factor. As already noted, a monetary conversion factor must be used to convert the relative values in an RVS into dollar payment amounts. The straightforward way to determine a conversion factor for Medicare payments that would be "budget neutral" -- that is, neither increase nor decrease Medicare outlays compared to what would have been expected without an RBRVS -- is to calculate the conversion factor for an index year. The computational procedure is to divide the total number of dollars spent by Medicare for physician services during the year by the total number of RVUs assigned to those services by the RVS, taking into account any assumed physician and beneficiary behavioral responses. The conversion factor can also be set to attain budget savings. All of the simulations reported in this chapter are based on a conversion factor that is budget neutral for the nation.

2. Functional Form. Concerns about the multiplicative functional form have been discussed in Chapter 3. Thus, the simulations primarily use an additive model, although a multiplicative model is also presented. The additive model used as the basis for the HCFA simulations assumes that the payment for a service is separable into two components: a) payment for physician's weighted work, which we define as work multiplied by the opportunity cost factor, and b) payment for overhead costs.[1]

Determining the total payment for a procedure under this additive model involves four steps:

a. Two separate payment pools are created by dividing current Medicare payments for a year into a portion that goes for physician's weighted work and a portion that goes for overhead. Each specialty has one national overhead rate which is calculated from HCFA's Physician Practice Cost and Income Survey. The payment pool for overhead is further broken down into pools for each specialty.

---

[1]For the purposes of this discussion, a State is more urban if more of its population resides in Metropolitan Statistical Areas.

b. A specialty-independent conversion factor for physician's weighted work is determined by dividing the physician's weighted work payment pool by the total work for all services rendered to Medicare beneficiaries during the year.

c. A specialty-specific conversion factor for overhead is determined by dividing the overhead payment pool for the specialty by the total work for all Medicare services provided by the specialty during the year. This conversion factor rests on two assumptions: (1) that total overhead costs for a specialty are approximately correct and appropriate and (2) that overhead can be allocated in proportion to physician work.

d. Total payment for the procedure is sum of:

   -- the physician's weighted work for the procedure multiplied by the specialty-independent work conversion factor, and

   -- the physician's work for the procedure multiplied by the specialty-specific overhead conversion factor.

This model is somewhat different from the PPRC additive model. The main difference is the way that the PPRC model allocates payments for practice costs in proportion to charges while the HCFA model allocates these payments in proportion to physician work.

3. Practice Cost Variations. The legislative mandate to conduct the study on RVSs included a mandate to develop and assess an appropriate index that would reflect justifiable differences in practice costs and costs of living based upon geographic location. Such an index is called a Geographic Practice Cost Index (GPCI).[2] The RBRVS developed at Harvard is simply a set of national relative values, and the Harvard study did not address, nor did it intend to address, whether physician payments should vary across geographic areas and localities.

Because the Harvard RBRVS (also referred to as the multiplicative model to differentiate it from the additive models) is based on differences in the relative value of inputs, some of whose costs vary from one geographic area to another, it is important to consider how payments should reflect these differences. A number of indices might be used to adjust physician payments for geographic cost of practice differences. Two indices will be used in the simulations of the multiplicative models. Both indices use the same measures of overhead costs such as the cost of

---

[2]For a description of the motivation and construction of GPCIs see Appendix C.

staff, rent, and professional liability insurance. The indices differ in the proxy that is used to determine the value of the physician's time in the geographic area: (1) the Professional Index uses the hourly earnings of other professionals with at least 5 years of college and (2) the No-Variation Index treats physician time as having the same value in all areas. The indices are the refined indices developed with HCFA funding by the Urban Institute and the Center for Health Economics Research (CHER) (Zuckerman, Welch, and Pope, 1989).

The multiplicative model, as simulated by HCFA, is simulated with and without a GPCI.[3] There are three variations of the HCFA additive model. They are differentiated by their use or lack of use of the GPCI. The first payment model does not include a GPCI. The second model applies a third GPCI, the overhead GPCI, to the overhead component.[4] The third model applies an index based on the physician's own time to the weighted work component of the additive model and applies the overhead GPCI of the GPCI to the overhead cost component of the additive model. As in the professional GPCI, the proxy for physician's time is the income of other professionals.

4. Geographic Redistributions. Conversion factors, in addition to being national in scope, can be specific to individual States or localities. Such conversion factors can be calculated so as to maintain the current geographic distribution of payments and to avoid reallocation of payments between States or between localities. We present only limited simulations of this strategy, because some of the results are essentially trivial (if a locality specific conversion factor is used, no State or locality either gains or loses, so all geographic redistributions are zero). Nevertheless, this strategy represents one option for implementing an RVS because locality-specific conversion factors would minimize the geographic redistributions.

5. Specialty Redistributions. Conversion factors can also be specialty-specific. Such conversion factors can be calculated so as to maintain the current distribution of Medicare payments among specialties. While this strategy might be undesirable if the goal of the RVS is to alter relative incomes of specialties, it could have certain advantages:

1. It would change incentives for individual physicians so as to encourage evaluation and management rather than technical services.

---

[3]Unless otherwise noted, when a GPCI is used in a multiplicative model, the refined professional index will be used.

[4]The overhead GPCI is an index of the variation in overhead costs among localities. Unlike the two indices described above, it does not include a component for the value of physician's time.

2. It might reduce undesirable provider responses because total revenue for the specialty would be unaltered. Thus, most physicians would not experience major revenue losses and might have less incentive to increase services in order to recoup losses.

3. Specialty-specific conversion factors might be useful as part of a phase-in strategy or as a permanent strategy to attenuate, without eliminating, redistributions among specialties.

We present only limited simulations of this strategy, because no specialty either gains or loses, so all specialty redistributions are zero, at least at the national level. This strategy is an alternative to the redistributions among specialties that are laid out in other simulations.

6. Effects of Changing Prices on Volume and Access. Analysts are divided on the effect of changing prices on the volume of services that physicians will supply. This debate has been both theoretical and empirical and focuses significantly on the issue of whether physicians are able to induce demand for their services when faced with changing prices, and on whether physicians seek or can attain a target income. There is some empirical evidence that suggests that physicians provide more services when payments are reduced, although from a theoretical point of view, the results are ambiguous. When physicians are faced with a price cut, there are at least two competing effects. Under the conventional economic theory, the physician will want to perform fewer of these less profitable services and substitute more profitable services. On the other hand, in order to attain the target income level, the physician may satisfy existing demand at the lower price or induce demand for the lower priced services, or induce demand for the higher priced procedures.

Another school of thought argues that physicians are unable to induce demand. Further complicating the issue, physicians may respond to either increases or decreases in prices by spending more time at leisure activities. Greater discussion of the general issue of physician response to changes in payment levels are presented in the Report to Congress entitled "Growth in the Volume and Intensity of Physician Services: Issues and Options."

Because of the ambiguity regarding behavioral response to payment changes, we have provided one simulation (Table 4.2) that shows the effect of different responses on the redistribution of payments across specialties. In the interest of compact presentation, we have not calculated separate versions of each simulation for each possible level of behavioral response. All simulations that do not specifically mention behavioral response are calculated on the assumption that no response occurs.

HCFA's Office of the Actuary (OACT) often performs simulations under the assumption that roughly half of the expected budget gains attributable to policy changes will not be realized. One way to operationalize the OACT model is to assume that providers will increase volume so as to recoup 50 percent of their net loss in revenue. This approach assumes that there is no change in volume if there is a net increase in Medicare revenues. In other words, a specialty that gains under an RVS-based payment system will not increase total Medicare revenues by providing more of the services for which payments have increased.

7. Balance Billing and Assignment. The economic impact of an RVS on beneficiaries depends on the impact on physician assignment and participation rates, the redistributive effects by specialty, locality, and type of service, and how much physicians are allowed to bill beyond the payments made by Medicare. If physicians are allowed to bill Medicare beneficiaries more than the amount allowed under the RVS-based payments, then any reduction in Medicare payments might be passed on to the beneficiary as out-of-pocket liability; this liability accrues to the beneficiary if the physician does not accept assignment. Predicting how physicians will respond to changes in payments is difficult, but a growing body of evidence indicates that physician "participation" rates (that is, the percent of physicians enrolled in the Medicare Participating Physician Program, under which a physician agrees in advance to accept assignment for all Medicare bills) vary in direct proportion to payments. For example, Mitchell, Rosenbach, and Cromwell (1988) found that a 10 percent increase in Medicare payments increased average participation rates by 9.5 percent. The possible effect of changes in payment amounts on the assignment rates is not incorporated into the beneficiary liability simulations.

8. Actual Allowed Charges. Some debate surrounds whether Medicare allowed charge should be the full amount determined from a RVS-based fee schedule or should be limited to the physician's actual charge or the physician's customary charge. The former option would increase program outlays while the latter would be somewhat more complex to administer. The simulations in this chapter assume that the Medicare allowed charge would be the fee schedule amount for all services. This assumption is far simpler to simulate because it does not require estimates of how fast physicians would raise their charges to the fee schedule amounts; the assumption does not represent a policy choice.

SIMULATION PROCEDURES

This report simulates impact by comparing the payments from Medicare's current CPR system with the payments determined by the RVS-based payment system.

Phase-In. All simulations describe a fully-implemented system; there are no simulations of a phase-in.

Data. The data files used are the 1987 Part B Medicare Annual Data (BMAD). The BMAD system has four major components: a procedure file containing aggregated data on each procedure for each specialty and locality, which allows aggregated analyses; a provider file, containing all bills for a 5 percent random sample of providers, which allows analysis of the impact of a change on total revenues for providers[5]; a beneficiary file that contains all bills for a 5 percent random sample of beneficiaries, which allows estimation of changes in beneficiary liability; and a prevailing charge file. All allowed charges were updated to 1988 by the use of the Medicare Economic Index (MEI) and of the allowed charge reductions for overpriced procedures, which were made on the basis of the 1988 prevailing charge file. The frequencies, however, are those for 1987.

The procedure file contains summaries prepared by the individual carriers. In 1986, several carriers made errors or used inconsistent methods in preparing the summaries. Errors of which HCFA was aware were corrected in the 1987 file, but other errors may remain, producing unknown bias. Because the procedure file contains data on all payments, there is no sampling error even when (as occurs in Table 4.6) allowed charges of only a few thousand dollars are reported for an observation. Nor is sampling error expected to be large in simulations from the beneficiary file, which are conducted only at the national level with data for almost one million beneficiaries. Sampling error can be a problem, however, with State-level analyses from the provider file and is discussed when these simulations are presented.

Work Estimates. HCFA's simulations of the multiplicative and additive models use the final Harvard work estimates of December 1988.[6]

Unsurveyed Specialties and Codes. The RBRVS study included 18 of the 40 specialties that HCFA identifies, and the study created relative values for procedures that account for 67 percent of Medicare payments for physician services. For simulation purposes, payments for the unsurveyed specialties and services could be estimated by extrapolating values for the missing services based upon current payments. Such extrapolation poses, however, substantial risk of bias and random error; for this

---

[5]Technically, the provider file counts neither the number of physicians nor the number of physician practices since there is variation among carriers as to what is measured by the provider identifications. Thus, it is possible that a physician may be a part of a number of provider organizations and a provider number may, conversely, include more than one physician.

[6]The final Harvard work and RBRVS values are available on data tape through the National Technical Information Service. The accession number is PB-89164404.

reason, the HCFA simulation models exclude specialties and codes that Harvard neither surveyed nor extrapolated. Consequently, for the purpose of simulation, the total Medicare Part B outlays are the sum of the outlays for all procedures and specialties covered in the study.

Certain surveyed specialties have been omitted from some or all of the tables; other should be used with caution:

- Allergy is omitted because of widespread inconsistencies in carrier reports of volume of services.
- Pediatrics is omitted from the tables because the volume of services is very low and represents an insignificant part of most pediatric practices.
- Psychiatry is omitted from the tables because surveyed codes represent less than a third of Medicare payments to psychiatrists. (This specialty is being resurveyed.)
- Radiology is included, but simulation results should be interpreted with caution because of the technical problems in the Harvard study that are described in Chapter 3.

Visit Codes. The Harvard study proposed adding the length of the encounter to the definitions of HCFA Common Procedure Coding System (HCPCS) visit and consult codes. Thus, an office visit for medical services for a new patient would be defined as brief if its scheduled time was 10 minutes. Unfortunately, Medicare data do not have information about length of visits because the current coding system is not based on visit length. The simulation assumes that the frequencies for visits coded under the new definitions will be the same as the frequencies coded under current CPT-4 definitions; there is no evidence to support this assumption, and the resulting biases are unknown.

Global Fees. The RBRVS methodology defines the work of a surgical service as including only those post-operative visits occurring before hospital discharge. This definition is inconsistent with the definitions now used by Medicare, which generally include post-operative visits until a certain period after operation, with the period varying from carrier to carrier and from procedure to procedure. This difference results in greater simulated transfers of payments from surgeons to other physicians than would probably occur in actual implementation of an RBRVS. The magnitude of this bias is unknown.[7]

---

[7]HCFA's Bureau of Quality Control (BQC) has been studying global fee packages for several important procedures. Physician consultant defined and staff recommended packages were completed for four main surgeries: transurethral prostatectomy, hip replacement, hernia repair, and pacemaker implantation. BQC has also developed extensive charge data dealing with cataracts and CABGs.

Anesthesia. For reasons described in Chapter 3, these services were omitted from the simulation. Although this specialty is not included in the simulations that show impacts on providers and beneficiaries, a methodology was devised by HCFA to determine payment amounts for a limited number of anesthesia codes under the HCFA additive model (see Appendix E).

General Practitioners. Although general practitioners were not surveyed, they have been grouped with family practitioners for certain simulations.

Assistants at Surgery. The Harvard team did not attempt to estimate RBRVS values for assistants at surgery. This type of service was therefore omitted from the simulation.

Other Modifiers. To the extent that HCPCS codes with modifiers were included in the surveyed or extrapolated values, they were included in the simulation. Other codes with modifiers were omitted from the simulation.

SIMULATION RESULTS

Table 4.1 shows the percentage change in Medicare physician payment by specialty for various RVS-based payment models; all comparisons are with CPR payments under current rules. The RVS-based payment simulation models shown in this table include the following:

1) The Harvard RBRVS as simulated by the Harvard team in September 1988 (see Hsiao et al., New England Journal of Medicine, September 1988). This model is based on data from the 1986 BMAD procedure file with no adjustment for MEI changes or reductions for overpriced procedures. It uses the early Harvard estimates of work for evaluation and management services.

2) The multiplicative model as simulated by the AMA in November 1988 (see AMA Center for Health Policy Research, 1988). This model is also based on data from the 1986 BMAD procedure file with no adjustment for practice costs and uses the early estimates of work for evaluation and management services. This model uses values extrapolated by AMA for those specialties and services that were not included in the Harvard study.

3) The multiplicative model as simulated by HCFA using the 1986 BMAD procedure file. To enhance comparability with Harvard and AMA simulations, payments under CPR have not been adjusted to reflect recent regulatory and legislative changes since 1986. Such changes are included in all other HCFA simulations. This simulation differs from Harvard's and AMA's in using the December 1988 work values and from AMA's in using only those codes assigned values by Harvard.

4) The multiplicative model as simulated by HCFA using 1988 Medicare allowed charges estimated from the 1987 BMAD procedure file.

5) Model (4) adjusted by the GPCI (Professional) index.

6) Model (4) with adjustment for a projected increase in volume by physicians whose Medicare revenues decrease. The simulation assumes that the increase in volume would offset 50 percent of the decrease in revenues.

7) The multiplicative model as simulated under the assumption of budget neutrality in each locality.

8) The PPRC additive model. This model is additive in that payments for work and overhead costs are separated. Opportunity costs are not included in the specification. It is similar, but not identical to the HCFA additive formulation that was described earlier.

9) The HCFA additive model simulated with no GPCI adjustment.

10) The HCFA additive model simulated with the GPCI applied only to overhead.

11) The HCFA additive model simulated with the GPCI applied to both overhead and weighted physician work components.

12) A charge-based RVS with a GPCI and no payment differentials across specialties. In contrast to the other simulations presented in this table, this simulation was performed using the 1986 provider file and was based on 476 high volume, high total dollar codes.[8]

Effects on Specialties. All simulations of the multiplicative models yield fairly similar results. Specialties such as family practice and internal medicine have substantial increases in Medicare payments while specialties such as ophthalmology, radiology, and thoracic surgery have substantial decreases in payments. Approximately half of the specialties would gain or lose less than 10 percent of Medicare payments. Only otolaryngology and dermatology results are inconsistent across simulations; the HCFA simulations show otolaryngology to be a relatively large net gainer, and dermatology to usually be a small gainer. While the Harvard and AMA simulations show both to be losing revenues, all HCFA simulations are consistent with the PPRC and charge-based simulations. Slight differences are not surprising given different values for visit codes and data assumptions.

---

[8]This simulation was carried out by CHER under cooperative agreement 17-C-98999/1-03.

In comparing the five HCFA simulations of the multiplicative model, it is clear that updating the CPR payment data to 1988, imposing a GPCI, and using locality-specific conversion factors have little effect on the redistribution of Medicare payments across specialties. Although we shall show later that some of these options have large effects on redistributions across geographic areas, these effects largely average out at the specialty level because specialists are located in many geographic areas. The exception is family practice, which is so concentrated in rural areas that the effects on individual physicians do not average out.

The HCFA simulation of the multiplicative model that incorporates behavioral response shows smaller redistributions than any other multiplicative model. This occurs because losing specialties are assumed to recoup half of their losses through increased volume; this increased volume requires a decreased conversion factor to maintain budget neutrality, which reduces payments per service to all physicians and decreases the net increased payments to winning specialties. In effect, such a behavioral response would transfer payments back from winners to losers. The smaller redistribution does not imply, however, that allowed charges have changed by a smaller amount than in the simulation with no behavioral response.

All the additive model simulations show that separating payments for overhead costs from payments for work would substantially reduce the redistributions of payments across specialties. This occurs because additive models effectively exclude the payments that go for overhead costs from the redistributive process among specialities. Nevertheless, the winning and losing specialties remain the same, and the relative magnitudes of their losses and gains remain almost unchanged.

The final simulation presented in Table 4.1 is a charge-based RVS. Since payments are based, to a large extent, on the payments under CPR, the redistributions are generally much smaller than those that would be found under any of the multiplicative or additive models. Only dermatology and family practice would show substantial gains under this simulation; no specialty would lose more than 4 percent.

Alternative behavioral assumptions. Table 4.2 shows the percent change in Medicare payments by specialty under various behavioral responses assuming budget neutrality for the multiplicative model with no GPCI adjustment. It is the position of the Department that the 50 percent behavioral response is most likely. This table is a generalization of the HCFA simulation of the multiplicative model that showed that redistributions among specialties would decrease if physicians responded to payment decreases by increasing the volume or intensity of services. This table shows that as the behavioral response increases, the redistributions decrease dramatically.

Effects on States and Localities. Table 4.3 illustrates the effect of various models on Medicare payments by State, compared to payments under CPR. This table includes the multiplicative model, with and without a GPCI, and the three HCFA additive models. Large redistributions occur under the multiplicative model with no GPCI, ranging from a 41 percent increase in payments to Mississippi physicians to a 27 percent decrease in Alaska. If payment levels are adjusted for practice costs using the GPCI based on earnings of other professionals, the decrease in Alaska is reduced to 3 percent and the increase in Mississippi is reduced to 19 percent. The amount of redistribution is generally smaller when this GPCI is used with the multiplicative model, but it is larger in a few States. As the results show, whether a State gains or loses with the introduction of a GPCI is not necessarily determined by whether it is urban or rural[9]. Compared to payments at a single national rate (no GPCI), rural States generally do worse with a GPCI and urban States generally do better, although neither is universally true. Compared to CPR, however, a payment system with a GPCI disadvantages some rural areas and advantages some urban areas. The effect is related to whether the area's approved charges are higher than the result of applying a GPCI to national approved charges.

The HCFA additive models yield geographic impacts similar to the comparable multiplicative models. Under the HCFA additive model with no GPCI, the State with the largest gain is again Mississippi (38 percent), and Alaska is still the biggest loser (-28 percent). When the GPCI is added to both components of the HCFA additive model, redistributions are almost identical to those found in the multiplicative model with a GPCI. Again, these changes can be substantial. When a GPCI is imposed on only the overhead component in the HCFA additive model, the magnitude of change is generally roughly halfway between the model with no GPCI and the model with the GPCI imposed on on both components. Again, there are exceptions to this pattern.

Because additive and multiplicative models have such different effects on redistribution of payments among specialties, the similarity of their redistributive effects on States and localities, with or without a GPCI, may be surprising. The explanation is that an RBRVS causes redistributions both because it changes relative values of procedures and because it replaces CPR's geographic variation in average payment levels with a uniformly determined system. The change in relative values of procedures accounts for most of the redistribution among specialties and the change in geographic variation accounts for most of the redistribution among States and localities. The additive model sharply reduces reallocations among specialties, but the additive and multiplicative

---

[9]For the purposes of this discussion, a State is more urban if more of its population resides in Metropolitan Statistical Areas.

models have similar effects on geographic variation because most of the redistribution seen under either system is the result of reducing the variation that occurs under CPR. Consequently, at a geographic level, the multiplicative and additive models resemble each other more than they resemble the current CPR payment system. The modest difference in geographic impact of the two systems is largely attributable to different geographic distribution of different specialties.

Table 4.4 shows the percent change in Medicare payments by locality for variations of the multiplicative model and shows that the redistributions can be large and vary greatly by localities. Using a GPCI almost always decreases the magnitude of the loss for the localities with the largest percent loss in Medicare payments and generally reduces the gain for most of the biggest gainers. Table 4.4 shows that urban localities often have large losses if the GPCI is not used, although this is not always the case. For example, Detroit and Chicago experience no change in Medicare payments without a GPCI, but gain when a GPCI is employed. The general pattern of urban losses reflects both higher practice costs in urban areas and a greater concentration of specialties such as ophthalmology and radiology, that tend to have large losses. The GPCI often moderates these losses. For some localities, such as the New York City suburbs, the GPCI changes the losses into gains.

Table 4.4 also shows that the redistributive effects can be sensitive to the way in which cost of the physician's time is treated. For example, when professional income (see Appendix B) is used as a proxy for the cost of physician's own time (professional GPCI), Manhattan, New York, loses 25 percent of its Medicare payments and loses almost 32 percent with a GPCI that assumes no adjustment for variation in the physician's own time (no variation GPCI). The table shows that redistributions are especially sensitive to choice of GPCI in some other localities; for example, redistributions vary from -3 percent to 20 percent in Alaska. Although such a result is not presented, an additive model would be similarly sensitive to choice of GPCI.

The last column of the table shows the redistributions when there are specialty-specific conversion factors, an approach that protects specialties from losing or gaining. Localities would experience redistributions almost as large under this approach as under payment methods in which specialties were not protected; this finding underlines the relatively small role of redistribution among specialties in redistributing payments among localities.

Impact of different practice cost adjustments by locality. Table 4.5 shows percent change in Medicare payments by locality for the three variations of the HCFA additive model when compared to the current payments. Under the HCFA additive model with no GPCI, Manhattan loses the most, -39 percent, while rural Nebraska would gain 67 percent. Again, the redistributions that would result from the HCFA additive model with no GPCI are quite similar to the redistributions that would result from the HCFA simulation of the multiplicative model with no GPCI. Imposing a GPCI

on overhead costs in the HCFA additive model tends to slightly reduce the redistributions. For example, for Las Vegas, the size of the decrease shrinks from 24 percent to 21 percent; for Manhattan, it decreases from 39 percent to 29 percent. For some localities, such as Cleveland, however, the size of negative redistribution increases from 7 to 9 percent. For winners, as well, imposing a GPCI on practice costs could have positive or negative effects, although much more frequently it had a negative effect. For example, whereas El Paso had a positive redistribution (2 percent) without a GPCI, it had a negative redistribution with a GPCI on overhead (-6 percent). Conversely, Rockford had a larger positive redistribution with a GPCI on overhead (6 percent versus 9 percent).

Applying a GPCI to both components of the HCFA additive model yields results that are quite similar to the simulation of the multiplicative model. Again, the results that are obtained for this additive model usually show less of a redistributive effect relative to the current payment system than the model that applies the GPCI only to the overhead component of the additive model; as already noted, these results are sensitive to the choice of GPCI.

State variation in impacts on specialties. Table 4.6 shows the impact on specialties by State with three geographic adjustments applied to the additive model: no GPCI (national rates), GPCI on the overhead component, and GPCI on both components. The results clearly show that there would be great variation in gains or losses of a specialty depending upon State. For example, internists gain 27 percent in Alabama under the no GPCI model but gain only 3 percent in New York.

Variations in impact within specialties. Table 4.7 shows, for various models and for each specialty, (1) the percent of Medicare allowed charges distributed to providers with different changes in Medicare allowed charges, and (2) the percent of providers with different changes in Medicare payments.

Tables 4.7a1 and 4.7a2 show the effects under a payment system based on the multiplicative model with a GPCI adjustment. Consistent with earlier tables, family practice (76 percent) and internal medicine (45 percent) have the largest proportion of their allowed charges distributed to providers that have the largest gain in allowed charges. Very few allowed charges would go to providers who lose more than 10 percent. Conversely, ophthalmology (74 percent), radiology (70 percent), and thoracic surgery (88 percent) would have the overwhelming majority of allowed charges paid to providers that lose more than 30 percent of Medicare allowed charges.

Table 4.7a2 shows the distribution of winning and losing providers within each specialty under the multiplicative model with a GPCI adjustment and illustrates that different providers in the same specialty would experience very different changes of allowed charges. Consistent with earlier tables, family practice (75 percent) and internal medicine (45 percent) have the largest proportion of providers that gain over 30 percent in Medicare revenues. However, a significant number of providers in each specialty would lose Medicare revenue, and some would

lose significantly. By definition, the providers that would lose must be either highly dependent on technical procedures or must be located in areas with current Medicare payments substantially above what would be determined using a GPCI. Conversely, radiology (58 percent), thoracic surgery (88 percent), and ophthalmology (67 percent) have the largest proportion of providers that lose over 30 percent, and very few providers in any of these specialties gain revenue. The results in Tables 4.7a1 and 4.7a2 are similar but not identical. If all providers had the same volume of allowed charges under the current system, the results would be identical. Table 4.7 also illustrates that individual providers may experience large gains or losses even though the specialty, as a whole, may have little change in Medicare revenue. For example, Table 4.1 shows that urology would experience almost no change under the multiplicative model with a GPCI. Nevertheless, Table 4.7a1 shows that 29 percent of allowed charges would go to providers that lose 10 to 30 percent and Table 4.7a2 shows that 27 percent of urology providers would lose 10 to 30 percent of Medicare revenue. This occurs both because urology allowed charges are distributed among providers and because providers themselves are distributed among localities that would gain or lose and because providers have different mixes of gaining and losing procedures.

Tables 4.7a-d show the heterogeneous effects within specialties of a number of payment models. Generally, applying a GPCI reduces both the amount of allowed charges that go to providers that have the largest change, and the number of providers with both large gains and losses -- that is, a GPCI reduces extreme effects. Applying a GPCI to both overhead and the physician's weighted work components of the additive model reduces extreme effects more than applying a GPCI to overhead alone.

Comparing Tables 4.7a and 4.7d also shows that, for almost all specialties, the HCFA additive models would produce less redistribution among providers as well as among specialties compared to the multiplicative model, with fewer providers gaining or losing more than 30 percent of Medicare revenues and fewer Medicare allowed charges going to providers that gain or lose large amounts.

Table 4.7e1 presents the same results for the charge-based RVS with a GPCI and no specialty differentials. The results of this table are consistent with Table 4.1, which shows that a charge-based payment system would produce much smaller redistributions across specialties than either the multiplicative or the HCFA additive models. This is so because a charge-based RVS system would result in payments based on submitted charges, which differ only modestly from CPR payments. Not surprisingly, at least 25 percent of allowed charges in each specialty would go to providers who experience changes in allowed charges of less than 10 percent.

Variations in impact on providers by State. Table 4.8 illustrates the percent of allowed charges that are distributed to providers that gain or lose various percents by State for various payment models. It also illustrates the percentage of providers with different changes in Medicare allowed charges for these models. This table can be considered to be a refinement of Table 4.3. Unfortunately, the table is of limited validity for States with a smaller number of physicians. The BMAD provider file,

from which the data for this table are taken, is a 5 percent file, which contains data on about 12,500 providers; while this is an average of about 250 providers per State, the numbers are quite small for some States. Small sample sizes can adversely affect the precision of the estimates. For example, in Iowa, where there are 102 providers in the sample, the simulation indicates that 59 percent of the providers would gain by more than 30 percent. We can have a confidence level of 95 percent that between 50 percent and 68 percent all providers in Iowa would have that amount of gain. If there were 400 providers in the Iowa sample, the confidence interval would be 54 percent to 65 percent. Confidence intervals will be similar in other States with similar sample size.

For simulations of distributions of Medicare allowed charges rather than the number of providers, the confidence intervals would be wider and may vary widely among States with similar sample size.

Tables 4.8a1 and 4.8a2 show the distribution of increased and decreased Medicare revenue, by State, using the multiplicative model with a GPCI. This table shows that although the percent change in payments may be small in a State, individual providers may experience substantial changes. Whether a provider gains or loses is related to its speciality and practice pattern and often to its geographic locality within the State. Thus, among the large States, such as California, New York, Pennsylvania, and Texas, there is a wide variation in percent redistribution of allowed charges among providers. This is not an unexpected result. Since this table includes all specialties, and there is wide variation among specialties, wide variation both within and among States should not be surprising.

Table 4.8b1 and Table 4.8b2 illustrate the effect under the HCFA additive model with no GPCI. Again, they show that the amount of allowed charges going to winning or losing providers and the percent of providers experiencing different percent changes in payments does not necessarily mirror the net gain or loss within the State. For example, Texas showed almost no change in percent payments, and New York showed a decrease of over 13 percent, they had approximately the same number of providers that showed only a very small change or no change in payments. Tables 4.8c and 4.8d show, respectively, the simulated effects of the HCFA additive model with a GPCI on practice costs and with a GPCI on both components. These results can be compared to Table 4.8a, which also has a GPCI applied to it; Tables 4.8c and 4.8d are roughly similar to one another but quite different from Table 4.8a, suggesting that the variation in impact on providers in a State is the result more of differences among specialties than among localities. The difference between the multiplicative and additive models is primarily a difference in impact on specialties, while the difference between the additive model with a GPCI on both components and the additive model with a GPCI on only the overhead component is primarily a difference in impact on geographic areas. Therefore, the similarity between Tables 4.8c and d and the difference from Table 4.8a suggests that the variability of impact within States primarily reflects interspecialty differences.

9. Impact on beneficiary liability. Table 4.9 shows the impact of various HCFA additive models on beneficiary out-of-pocket liability. The table presents six simulations representing combinations of three payment models (additive, no GPCI; additive, GPCI on overhead; additive, GPCI on both components) and two possible rules regarding balance billing by physicians (either current balance billing practices are maintained or balance billing is limited to 120 percent of the allowable charge). In these simulations no adjustment in the maximum actual allowable charge (MAAC) has been presumed. These simulations assume that the volume of services does not change and that physicians do not change their practices regarding acceptance of assignment. The two rows of each table show the percent of beneficiaries who fall into each dollar category for liability amount.

Table 4.9A1 shows the effect of the HCFA additive model with no GPCI under current balance billing practices. Under this model the percent of beneficiaries with no coinsurance liability decreases from 22 to 18 while the percentage with coinsurance between $1 and $250 rises slightly. The percentage with coinsurance liability more than $1,000 does not change. The percent of beneficiaries with low total liability does not change and the percent with high liability rises slightly. The change is only 1 percentage point, but each percentage point represents approximately 250,000 beneficiaries.

Table 4.9A2 shows the effect of the HCFA additive model with no GPCI and with a 120 percent limit on balance billing. Coinsurance liability is the same as in Table 4.9A1, but balance billing liability decreases, substantially increasing the percent of beneficiaries with smaller coinsurance and total out-of-pocket liability. For example, the percent of beneficiaries with greater than $1,000 in total out-of-pocket liability is 5 percent under the current payment system, 6 percent under the HCFA additive model with no GPCI and no change in balance billing, but only 2 percent under balance billing caps. The decreased beneficiary liability is attributible to balance billing rules and not to the fee schedule itself.

Tables 4.9B and 4.9C show similar patterns. The distribution of levels of out-of-pocket liability would be very similar in the three payment models, and caps on balance billing would decrease out-of-pocket liability by similar amounts for all three models. It is important to recognize that this simulation assumes no change in volume and no decrease in acceptance of assignment. Because physicians now accept assignment on about 80 percent of bills, the impact of the RBRVS on balance billing liability is tightly constrained. If physicians accepted assignment less often when their payments were decreased, beneficiary liability might be substantially higher.

Finally, it is important to realize that beneficiary coinsurance costs fall in areas where allowed charges fall but that balance billing liability rises in these same areas. The rise in balance billing is strongly influenced by the assignment rate, which varies widely among geographic areas.

PRICING OF PROCEDURES

Determining whether procedures are currently overpriced relative to a payment system based on RBRVS requires knowing what the conversion factors would be under the RBRVS, and this requires selecting a particular payment model from all those described above. Table 4.10 shows the changes in payments for selected procedures with a high total dollar volume that would result from various additive models. Charges for all HCPCS codes are presented in Appendix D. Charges for anesthesiology procedures are presented in Appendix E. The code that accounts for most Medicare payments is cataract removal (66984). Under the various HCFA additive models, Medicare allowed charges for this procedure would be reduced almost 33 percent. Six of the 10 HCPCS codes accounting for most payments are visit codes; all would have significant increases in Medicare payments. The relative frequency of these various services in a specialty and at the provider level strongly influence the impact of an RBRVS on those levels.

CONCLUSION

This chapter has presented simulations of a number of different RVS-based payment systems for determining payments for physicians under Medicare. The payment models that have been included in the simulation have included the multiplicative model under various implementation strategies, additive modifications of the Harvard RBRVS, and a charge-based RVS.

The effects of an RBRVS vary widely according to which variation and implementation strategy is selected, and no generalization is possible regarding the impact of an RBRVS on specialties, geographic localities, or beneficiaries. Indeed depending on the choices of policies and goals, a range of outcomes are possible. For example, at one extreme, redistributions among specialties could be substantial, although specialty-specific conversion factors could minimize such effects. Redistributions among geographic areas could likewise be substantial, although locality-specific conversion factors could likewise minimize that effect. Although beneficiary liability would remain relatively unchanged, at least in the aggregate if assignment rates did not change, liability might rise if assignment rates fell or fall if balance billing were constrained.

Clearly, the implications of any payment system could be sensitive to various assumptions about issues such as whether it should be budget neutral, how physicians would respond, both in terms of volume and intensity and assignment, and how beneficiaries would respond. Unfortunately, as with all predictive modelling, while forecasts can be made on the basis of the behavioral assumptions, the accuracy of the assumptions can never be completely verified. Thus, by implication, the validity of the results of the simulations are conditional, and may not be completely accurate. Given the available data and the current literature on economic behavior in response to changes in allowed charges, these results represent the most accurate and detailed forecasts yet presented on this topic.

Table 4.1

Percent Change in Medicare Allowed Charges by Specialty for Various RVS Based Payment Models

Specialty	Multiplicative Models							Additive Models				Charge /4 Based RVS GPCI ADJ No Specialty Difference CHER
	RBRVS Harvard /1	RBRVS AMA /2	RBRVS HCFA (a)	RBRVS HCFA (b)	RBRVS HCFA (c)	RBRVS HCFA (d)	RBRVS Locality Conversion Factor (e)	PPRC / 3	No GPCI HCFA (f)	GPCI On Overhead Costs HCFA(g)	GPCI On Both Components HCFA(h)	
Dermatology	-15	-6	7	2	5	-1	9	1	2	2	3	16
Fam./Gen. Practice	65	65	71	61	56	42	51	38	32	32	30	11
General Surgery	-15	-19	-8	-11	-12	-7	-13	-10	-5	-5	-6	3
Gynecology	5	2	3	1	2	1	3	2	1	1	2	7
Internal Medicine	35	24	31	27	30	15	29	17	15	15	16	-3
Ophthalmology	-45	-39	-36	-37	-37	-22	-35	-16	-19	-19	-18	-3
Orthopedic Surgery	5	-10	6	2	2	1	2	-7	1	1	1	-1
Otorhinolaryng.	-5	-3	19	15	16	10	19	6	8	8	8	9
Pathology	-25	-27	-21	-27	-28	-17	-26	-25	-18	-18	-18	2
Radiology	-25	-26	-35	-36	-36	-22	-35	-21	-21	-21	-21	-3
Thoracic Surgery	-45	-40	-46	-48	-48	-27	-46	-20	-27	-27	-27	0
Urology	-5	-5	2	-1	-2	-3	0	-5	0	0	0	0

1. Naiso, et al. "Special Report" NEJM, 319(13)886, September 29, 1988.
2. American Medical Association, Center for Health Policy Research, Impact of Medicare Payment Schedule Alternatives on Physicians, Chicago, AMA, 1988.
3. Physician Payment Review Commission, Annual Report to Congress 1989, Table 5 Washington, April 1989.
4. Center for Health Economics Research, 1988 Medicare allowed charges estimated from 1986 BMAD provider file for 476 high total dollars codes. Uses interim GPCI.

NOTE: RBRVS is resource-based relative value scale; RVS is relative value scale; Harvard RBRVS (multiplicative) models combine work, opportunity cost and practice cost elements by multiplying; Additive models combine elements by addition; GPCI is the geographic practice cost index; locality is HCFA carrier pricing locality; charge based RVS is calculated on Medicare allowed charges; excludes allergy and rheumatology, anesthesiology, oral surgeons, pediatrics and psychiatry. HCFA models are:

(a) unadjusted 1986 BMAD procedure file, (for comparison to Harvard and AMA).
(b) 1988 Medicare allowed charges estimated from 1987 BMAD procedure file adjusted by MEI updates and overpriced procedure reductions,
(c) model b further adjusted with the refined professional GCPI,
(d) model b (without a GPCI adjustment) with a volume adjustment for assumed behavioral changes resulting from a fee schedule implementation,
(e) conversion factor calculated to be budget neutral for each locality
(f) HCFA additive model no GPCI, (g) model f with GPCI on overhead costs; (h) model f with GPCI on both components. See technical appendix B for detailed explanation.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations.

TABLE 4.2

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES, BY SPECIALTY, UNDER VARIOUS BEHAVIORIAL RESPONSES AT THE PROCEDURE LEVEL, ASSUMING BUDGET NEUTRALITY, HCFA MULTIPLICATIVE MODEL, NO GPCI

Specialty	BEHAVIORIAL CHANGE ASSUMPTION*			
	No behaviorial offset	25% offset	50% offset	75% offset
	(percent change in allowed charges)			
Dermatology	2%	0%	-1%	- 2%
Fam./Gen. Practice	61	52	42	27
General Surg.	-11	- 9	- 7	- 4
Gynecology	1	1	1	0
Internal Med.	27	22	15	7
Ophthalmology	-37	-30	-22	-12
Orthopedics	2	1	1	1
Otorhinolar.	15	12	10	6
Pathology	-27	-22	-17	-10
Radiology	-36	-30	-22	-13
Thoracic Surg.	-48	-38	-27	-15
Urology	- 1	- 2	- 3	- 2

*These results are based on an assumption that physicians receiving a reduced payment for a service will partially (by the indicated assumed percentage) offset the loss by increasing volume/intensity of the service. Excludes allergy and rheumatology, anesthesiology, oral surgeons, pediatrics, and psychiatry.

Source: HCFA, Office of Research and Demonstrations. National 1988 estimates based on 1987 BMAD Procedure file.

Table 4.3

Percent Change in Medicare Allowed Charges by State For Various RVS Payment Models

STATE	ALLOWED CHARGES (000,000's)	Multiplicative		Additive		
		NO GPCI	WITH GPCI	NO GPCI	GPCI on OVERHEAD	GPCI on BOTH
US	$11,987	0	0	0	0	0
				Percent		
Alabama	214	14	1	13	7	1
Alaska	7	-27	-3	-28	-21	-4
Arizona	184	-14	-14	-11	-10	-11
Arkansas	134	17	-4	15	4	-6
California	1,422	-20	-7	-19	-12	-6
Colorado	90	21	18	21	18	18
Connecticut	150	-4	2	-2	1	4
Delaware	28	9	14	9	7	13
Dist. of Columbia	141	-14	2	-13	-8	3
Florida	1,105	-10	-13	-10	-11	-13
Georgia	294	12	-2	10	5	-3
Hawaii	40	-11	-7	-11	-8	-8
Idaho	31	20	7	20	16	7
Illinois	468	10	19	9	13	18
Indiana	218	8	0	8	2	-0
Iowa	105	30	16	28	21	14
Kansas	87	5	-10	5	0	-9
Kentucky	141	19	6	16	10	4
Louisiana	215	5	-1	7	4	1
Maine	49	17	-1	20	14	2
Maryland	137	3	9	3	4	9
Massachusetts	284	-4	-1	-1	3	3
Michigan	453	6	19	4	9	17
Minnesota	85	13	12	14	11	12
Mississippi	112	41	19	38	28	17
Missouri	274	16	9	16	14	9
Montana	34	6	-6	8	3	-5
Nebraska	69	25	6	23	14	4
Nevada	49	-24	-16	-22	-18	-14
New Hampshire	30	19	7	20	18	9
New Jersey	407	0	12	0	5	12
New Mexico	46	-2	-10	-1	-5	-9
New York	1,135	-15	0	-15	-7	-1
North Caroline	266	13	-4	13	4	-4
North Dekota	38	3	-11	3	-3	-11
Ohio	530	4	-1	3	0	-1
Oklahome	140	10	-4	10	3	-4
Oregon	112	1	-4	2	2	-2
Pennsylvania	816	6	6	4	4	4
Rhode Island	60	5	6	8	6	8
South Caroline	104	18	1	17	7	0
South Dekota	35	15	-6	16	7	-5
Tennessee	227	18	1	19	9	1
Texes	701	-6	-15	-3	-10	-13
Utah	42	17	11	21	16	14
Vermont	18	22	0	21	15	0
Virginie	193	25	12	23	17	10
Weshington	207	-3	-1	-2	-2	0
West Virginie	90	10	-3	9	3	-3
Wisconsin	164	11	3	11	6	4
Wyoming	9	28	19	23	18	14

NOTES: Date includes only specialties and procedures valued in Herverd RBRVS Phase I study. Excludes orel surgeons, allergy, rheumatology, and anestheaiology, Puerto Rico and railroad retirees.

SOURCES: HCFA, Office of Reaearch end Demonstrations. Netionel end Stete 1988 estimates based on 1987 BMAD Procedure file.

TABLE 4.4

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY FOR VARIOUS MULTIPLICATIVE MODELS COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER-LOCALITY	AREA DESIGNATION	CPR ALLOWED CHARGES (IN 100000)	NO GPCI	GPCI/PROFESSIONAL	GPCI/NO VARIATION	BUDGET NEUTRAL BY SPECIALTY
		NATIONAL	119866	0	0	0	0
AK	0102001	ALASKA	70	-27	-3	-20	-30
AL	0051005	BIRMINGHAM, AL	621	-2	-11	-7	3
AL	0051002	NORTH CENTRAL AL	238	21	6	13	17
AL	0051001	NORTHEAST AL	287	13	2	6	14
AL	0051006	RURAL AL	308	46	20	36	18
AL	0051003	SOUTHEAST AL	394	12	-2	5	19
AL	0051004	SOUTHWEST AL	287	12	-2	7	16
AR	0052013	ARKANSAS	1340	17	-4	6	13
AZ	0103005	FLAGSTAFF (CITY), AZ	12	-14	-18	-15	-7
AZ	0103001	PHOENIX (CITY), AZ	1175	-18	-15	-16	-9
AZ	0103007	PRESCOTT (CITY), AZ	30	-5	-11	-8	-5
AZ	0103099	RURAL ARIZONA	166	1	-2	1	-6
AZ	0103002	TUCSON (CITY), AZ	420	-12	-14	-12	-6
AZ	0103008	YUMA (CITY), AZ	39	-4	-10	-7	-3
CA	0205026	ANAHEIM-SANTA ANA, CA	1197	-21	-4	-12	-20
CA	0054214	BAKERSFIELD, CA	242	-19	-10	-15	-16
CA	0054211	FRESNO/MADERA, CA	349	-19	-16	-17	-15
CA	0054213	KINGS/TULARE, CA	143	-11	-8	-8	-11
CA	0205018	LOS ANGELES, CA (1ST OF 8)	5274	-22	-4	-14	-22
CA	0054203	MARIN/NAPA/SOLANO, CA	186	-13	-2	-4	-13
CA	0054210	MERCED/SURR. CNTYS, CA	210	-12	-6	-9	-13
CA	0054212	MONTEREY/SANTA CRUZ, CA	225	-13	-3	-7	-9
CA	0054201	N. COASTAL CNTYS, CA	339	-13	-8	-9	-13
CA	0054202	NE RURAL CA	330	-10	-8	-8	-11
CA	0054207	OAKLAND-BERKELEY, CA	789	-13	3	-2	-10
CA	0054227	RIVERSIDE, CA	570	-23	-14	-19	-20
CA	0054204	SACRAMENTO/SURR. CNTYS, CA	626	-15	-6	-11	-10
CA	0054215	SAN BERNADINO/E.CENTRAL CA	418	-19	-10	-15	-17
CA	0205028	SAN DIEGO/IMPERIAL, CA	1241	-27	-18	-22	-22
CA	0054205	SAN FRANCISCO, CA	497	-13	7	-0	-10
CA	0054206	SAN MATEO, CA	200	-18	0	-7	-14
CA	0205016	SANTA BARBARA, CA	302	-27	-21	-23	-21
CA	0054209	SANTA CLARA, CA	468	-19	-0	-9	-15
CA	0054208	STOCKTON/SURR. CNTYS, CA	326	-17	-11	-14	-15
CA	0205017	VENTURA, CA	288	-23	-12	-17	-22
CO	0055001	COLORADO	901	21	19	19	20
CT	1023004	EASTERN CONN.	157	5	8	8	5
CT	1023001	NW AND N.CENTRAL CONN.	721	-1	3	3	3
CT	1023003	SOUTH CENTRAL CONN.	376	-8	0	-3	-3
CT	1023002	SW CONNECTICUT	247	-15	1	-8	-12
DC	0058001	D.C. + MD/VA SUBURBS	1406	-14	1	-10	-11
DE	0057001	DELAWARE	278	9	13	7	9
FL	0059003	FORT LAUDERDALE, FL	3265	-15	-15	-13	-15
FL	0059004	MIAMI, FL	1929	-20	-10	-16	-22
FL	0059002	N/NC FLORIDA CITIES	4846	-6	-13	-8	-5
FL	0059001	RURAL FLORIDA	1015	4	-8	-1	-2
GA	1311001	ATLANTA, GA	1140	3	-4	2	4

TABLE 4.4

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR VARIOUS MULTIPLICATIVE MODELS
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER-LOCALITY	AREA DESIGNATION	CPR ALLOWED CHARGES (IN 100000)	NO GPCI	GPCI/PROFESSIONAL	GPCI/NO VARIATION	BUDGET NEUTRAL BY SPECIALTY
GA	1311004	RURAL GEORGIA	413	49	24	38	23
GA	1311002	SMALL GA CITIES 02	674	4	-11	-2	6
GA	1311003	SMALL GA CITIES 03	713	11	-6	4	11
HI	0112001	HAWAII	402	-11	-7	-8	-12
IA	0064005	DES MOINES(POLK/WARREN),IA	186	25	20	21	18
IA	0064008	IOWA CITY (CITY LIMITS)	75	-6	-19	-11	4
IA	0064003	NORTH CENTRAL IOWA	135	39	24	32	30
IA	0064002	NORTHEAST IOWA	119	45	28	37	34
IA	0064006	NORTHWEST IOWA	171	26	10	19	20
IA	0064004	S.CEN. IA(EXCL DES MOINES)	128	19	2	11	25
IA	0064001	SE IOWA (EXCL IOWA CITY)	136	33	21	28	31
IA	0064007	SOUTHWEST IOWA	100	52	32	43	31
ID	0513000	IDAHO CARRIER WIDE	16	-2	-23	-16	33
ID	0513012	NORTH IDAHO	79	26	12	22	17
ID	0513011	SOUTH IDAHO	211	20	9	18	18
IL	0062110	CHAMPAIGN-URBANA, IL	57	22	6	15	31
IL	0062116	CHICAGO, IL	2506	0	17	8	-2
IL	0062103	DE KALB, IL	118	22	13	19	27
IL	0062111	DECATUR, IL	85	35	27	33	29
IL	0062112	EAST ST. LOUIS, IL	256	34	29	33	31
IL	0062106	KANKAKEE, IL	69	36	25	33	27
IL	0062108	NORMAL, IL	102	24	23	23	24
IL	0062101	NORTHWEST, IL	31	34	22	29	27
IL	0062105	PEORIA, IL	119	33	36	33	30
IL	0062107	QUINCY, IL	104	38	25	33	34
IL	0062104	ROCK ISLAND, IL	93	29	23	25	29
IL	0062102	ROCKFORD, IL	195	7	12	10	4
IL	0062113	SOUTHEAST IL	108	22	10	17	19
IL	0062114	SOUTHERN IL	147	8	-2	4	17
IL	0062109	SPRINGFIELD, IL	160	14	11	12	16
IL	0062115	SUBURBAN CHICAGO, IL	528	11	22	18	10
IN	0063001	METROPOLITAN INDIANA	1228	-1	-6	-6	1
IN	0063003	RURAL INDIANA	256	46	30	36	21
IN	0063002	URBAN INDIANA	693	11	-0	4	14
KS	0074005	KANSAS CITY, KA	60	12	5	10	15
KS	0065001	RURAL KANSAS	702	5	-11	-1	4
KS	0074004	SUBURBAN KANSAS CITY, KA	103	2	-3	2	1
KY	0066001	LEXINGTON & LOUISVILLE, KY	546	6	-5	-1	9
KY	0066003	RURAL KENTUCKY	242	54	36	44	22
KY	0066002	SM CITIES (CITY LIMITS) KY	624	17	5	11	14
LA	0052807	ALEXANDRIA, LA	118	-15	-22	-20	-1
LA	0052803	BATON ROUGE, LA	247	-4	-10	-8	7
LA	0052806	LAFAYETTE, LA	120	9	-1	4	18
LA	0052804	LAKE CHARLES, LA	91	1	-9	-4	10
LA	0052805	MONROE, LA	108	11	-3	2	13
LA	0052801	NEW ORLEANS LA	754	-5	-6	-5	4
LA	0052850	RURAL LOUIS ANA	468	35	19	27	21
LA	0052802	SHREVEPORT, LA	245	-0	-3	-4	8

TABLE 4.4

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR VARIOUS MULTIPLICATIVE MODELS
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER-LOCALITY	AREA DESIGNATION	CPR ALLOWED CHARGES (IN 100000)	NO GPCI	GPCI/PROFESSIONAL	GPCI/NO VARIATION	BUDGET NEUTRAL BY SPECIALTY
MA	0070002	MASS.SUBURBS/RURAL(CITIES)	752	6	8	9	9
MA	0070001	MASSACHUSETTS URBAN	2089	-0	-4	-4	-0
MD	0069001	BALTIMORE/SURR. CNTYS. MD	1083	-1	7	1	-2
MD	0069003	SOUTH + E. SHORE MD	151	16	20	17	10
MD	0069002	WESTERN MARYLAND	140	25	27	26	18
ME	2120002	CENTRAL MAINE	159	19	-1	14	26
ME	2120001	NORTHERN MAINE	146	25	4	19	24
ME	2120003	SOUTHERN MAINE	187	9	-4	7	16
MI	0071001	DETROIT, MI	2541	-0	20	7	-3
MI	0071002	MICHIGAN, NOT DETROIT	1991	15	18	15	9
MN	0072000	MINNESOTA CARRIER WIDE	61	-16	-19	-18	36
MN	0072002	NORTHERN MINNESOTA	109	30	19	24	20
MN	0072004	SOUTHERN MINNESOTA	82	39	26	33	22
MN	1024001	ST. PAUL-MINNEAPOLIS, MN	598	9	11	8	11
MO	0074003	K.C. (JACKSON COUNTY), MO	460	-1	-6	-1	4
MO	0074002	N. K.C. (CLAY/PLATTE), MO	63	8	4	9	4
MO	1126003	RURAL (EXCL RURAL NW) MO	270	64	39	57	36
MO	0074006	RURAL NW COUNTIES, MO	105	49	28	44	24
MO	1126002	SW. E.CITIES+JEFF.CNTY.MO	263	18	8	15	16
MO	0074001	ST. JOSEPH, MO	80	10	-7	5	15
MO	1126001	ST. LOUIS/LG. E.CITIES, MO	1502	11	8	11	14
MS	1025001	RURAL MISSISSIPPI	539	62	35	49	40
MS	1025002	URBAN MS (CITY LIMITS)	577	22	6	15	27
MT	0075101	MONTANA	942	6	-6	2	9
NC	1334000	NORTH CAROL CARRIER WIDE	1227	-18	-33	-27	9
NC	1334095	RURAL NORTH CAROLINA	875	60	37	50	28
NC	1334094	URBAN (CITY LIMITS) NC	560	9	-2	4	0
ND	0082001	NORTH DAKOTA	384	3	-10	-2	3
NE	0064500	NEBRASKA CARRIER WIDE	11	52	23	38	30
NE	0064515	OMAHA + LINCOLN, NE	399	8	-6	1	11
NE	0064516	RURAL NEBRASKA	99	96	59	79	33
NE	0064517	URBAN (CNTY POP>25000) NE	178	24	3	15	28
NH	0078040	NEW HAMPSHIRE	304	19	7	17	22
NJ	1331002	MIDDLE NEW JERSEY	871	6	19	11	5
NJ	1331001	NORTHERN NEW JERSEY	2552	-5	9	1	-4
NJ	1331003	SOUTHERN NEW JERSEY	642	8	16	12	4
NM	0136005	NEW MEXICO	456	-2	-9	-5	-0
NV	0129003	ELKO & ELY (CITIES), NV	6	-16	-17	-14	-19
NV	0129001	LAS VEGAS,ET AL(CITIES),NV	330	-26	-17	-23	-22
NV	0129002	RENO, ET AL (CITIES), NV	141	-23	-17	-18	-15
NV	0129099	RURAL NEVADA	10	19	30	24	-17
NY	0080101	BUFFALO/SURR. CNTYS, NY	660	12	11	9	11
NY	0080301	MANHATTAN, NY	2622	-41	-25	-32	-36
NY	0080103	N. CENTRAL CITIES, NY	962	5	2	3	8
NY	0080302	NYC SUBURBS/LONG I., NY	4610	-18	4	-6	-19
NY	0083203	POUGHKPSIE/N.NYC SUBURBS	446	4	6	5	-0
NY	1433204	QUEENS, NY	879	-13	11	0	-16
NY	0083202	ROCHESTER/SURR. CNTYS. NY	404	8	13	8	4

TABLE 4.4

PERCERT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR VARIOUS MULTIPLICATIVE MODELS
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER-LOCALITY	AREA DESIGNATION	CPR ALLOWED CHARGES (IN 100000)	NO GPCI	GPCI/PROFESSIONAL	GPCI/NO VARIATION	BUDGET NEUTRAL BY SPECIALTY
NY	0080104	RURAL NEW YORK	763	23	17	20	15
OH	1636001	AKRON, OH	492	6	1	3	7
OH	1636002	CINCINATI, OH	768	3	-2	0	4
OH	1636003	CLEVELAND, OH	1441	-8	-8	-11	-5
OH	1636004	COLUMBUS, OH	515	0	-6	-2	2
OH	1636005	DAYTON, OH	439	9	5	5	4
OH	1636009	E. CENTRAL (STEUBENVL), OH	136	22	10	17	20
OH	1636007	MANSFIELD, OH	93	17	5	12	18
OH	1636013	MARION + SURR. CNTYS., OH	62	36	23	32	19
OH	1636006	NORTHWEST (LIMA) OH	114	29	17	25	14
OH	1636014	SCIOTO VALLEY, OH	123	13	5	10	7
OH	1636015	SOUTHEAST (OHIO VALLEY) OH	177	27	14	22	15
OH	1636008	SPRINGFIELD, OH	67	22	20	19	14
OH	1636010	TOLEDO (LUCAS/WOOD), OH	414	-1	-4	-2	0
OH	1636012	W. CENTR (LAKE PLAINS), OH	85	23	10	18	14
OH	1636011	YOUNGSTOWN, OH	373	7	0	3	2
OK	0137001	OK CITY, ET AL (CITIES),OK	480	-1	-11	-5	6
OK	0137099	RURAL OKLAHOMA	194	58	36	47	20
OK	0137004	SM. CITIES (NORTHERN), OK	117	6	-10	-1	15
OK	0137003	SM. CITIES (SOUTHERR), OK	160	11	-5	3	17
OK	0137002	TULSA, ET AL (CITIES), OK	446	-0	-9	-5	5
OR	0138002	EUGENE, ET AL (CITIES), OR	205	-7	-12	-6	-1
OR	0138001	PORTLAND,ET AL (CITIES),OR	375	-4	-5	-4	2
OR	0138099	RURAL OREGON	238	16	11	17	4
OR	0138003	SALEM, ET AL (CITIES), OR	160	2	-4	2	8
OR	0138012	SW OR. CITIES(CITY LIMITS)	143	-1	-7	-1	2
PA	0086502	LG. PENNSYLVANIA CITIES	4228	4	7	6	1
PA	0086501	PHILLY/PITT MEO SCHS/HOSPS	1555	-6	-2	-5	-3
PA	0086504	RURAL PENNSYLVANIA	700	22	12	18	13
PA	0086503	SMALL PENNSYLVANIA CITIES	1679	13	6	10	7
RI	0087001	RHODE ISLAND	596	5	5	3	12
SC	0088001	SOUTH CAROLINA	1038	18	1	8	17
SD	0082002	SOUTH DAKOTA	348	15	-5	8	15
TN	0544035	TENNESSEE	2268	18	1	9	19
TX	0090029	ABILENE, TX	28	48	27	36	17
TX	0090026	AMARILLO, TX	33	32	15	23	5
TX	0090031	AUSTIN, TX	176	-11	-21	-15	0
TX	0090020	BEAUMONT, TX	85	36	32	32	6
TX	0090009	BRAZORIA, TX	7	51	54	46	6
TX	0090010	BROWNSVILLE, TX	35	52	35	41	17
TX	0090024	CORPUS CHRISTI, TX	150	-13	-21	-16	-9
TX	0090011	DALLAS, TX	911	-20	-24	-23	-11
TX	0090012	DENTON, TX	10	34	28	30	1
TX	0090014	EL PASO, TX	117	-2	-8	-6	3
TX	0090028	FORT WORTH, TX	366	-2	-12	-7	3
TX	0090015	GALVESTON, TX	50	15	[illegible]	9	-11
TX	0090016	GNAYSON, TX	12	46	[illegible]	37	18
TX	0090018	HOUSTON, TX	1293	-17	[illegible]	-20	-7

TABLE 4.4

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR VARIOUS MULTIPLICATIVE MODELS
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER-LOCALITY	AREA DESIGNATION	CPR ALLOWED CHARGES (IN 100000)	NO GPCI	GPCI/PROFESSIONAL	GPCI/NO VARIATION	BUDGET NEUTRAL BY SPECIALTY
TX	0090033	LAREDO, TX	5	85	58	71	16
TX	0090017	LONGVIEW, TX	10	47	29	40	15
TX	0090021	LUBBOCK, TX	98	-1	-19	-9	-2
TX	0090019	MC ALLEN, TX	46	62	30	49	20
TX	0090023	MIDLAND, TX	1	74	80	71	9
TX	0090002	NORTHEAST RURAL TEXAS	1021	1	-14	-7	6
TX	0090013	ODESSA, TX	4	53	51	48	15
TX	0090025	ORANGE, TX	4	86	78	79	17
TX	0090030	SAN ANGELO, TX	13	27	5	17	-1
TX	0090007	SAN ANTONIO, TX	584	-12	-22	-17	-5
TX	0090003	SOUTHEAST RURAL TEXAS	1139	-6	-19	-13	1
TX	0090006	TEMPLE, TX	6	79	55	67	12
TX	0090008	TEXARKANA, TX	9	46	21	36	18
TX	0090027	TYLER, TX	56	23	12	16	-6
TX	0090032	VICTORIA, TX	4	6	-4	2	19
TX	0090022	WACO, TX	27	58	38	45	28
TX	0090004	WESTERN RURAL TEXAS	682	-1	-19	-10	9
TX	0090034	WICHITA FALLS, TX	28	25	8	17	-1
UT	0091009	UTAH	416	17	12	14	24
VA	1049001	RICHMOND+CHARLOTTESVL, VA	523	12	0	6	12
VA	1049004	RURAL VIRGINIA	249	61	39	51	33
VA	1049003	SM. TOWN/INDUSTRIAL VA	601	30	13	21	27
VA	1049002	TIDEWATER+N. VA COUNTIES	557	18	12	15	15
VT	0078050	VERMONT	180	22	1	16	19
WA	0093004	E.CEN+NE WA (EXCL SPOKANE)	11	43	41	43	-11
WA	0093002	SEATTLE (KING CNTY), WA	659	-3	3	-1	0
WA	0093003	SPOKANE+RICHLND(CITIES),WA	335	-1	-2	-2	2
WA	0093001	W + SE WA (EXCL SEATTLE)	1061	-4	-2	-4	-3
WI	0095113	CENTRAL WISCONSIN	27	42	21	33	15
WI	0095140	GREEN BAY, WI (NORTHEAST)	190	15	3	9	15
WI	0095154	JANESVILLE, WI (S-CENTRAL)	99	21	6	14	15
WI	0095119	LA CROSSE, WI (W-CENTRAL)	90	17	4	10	17
WI	0095115	MADISON, WI (DANE COUNTY)	145	3	-6	-1	16
WI	0095146	MILWAUKEE SUBURBS, WI (SE)	238	11	12	10	8
WI	0095104	MILWAUKEE, WI	507	-1	-2	-3	4
WI	0095112	NORTHWEST WISCONSIN	65	39	22	31	21
WI	0095160	OSHKOSH, WI (E-CENTRAL)	170	13	1	7	15
WI	0095114	SOUTHWEST WISCONSIN	26	64	42	56	22
WI	0095136	WAUSAU, WI (N-CENTRAL)	86	10	-3	4	18
WV	1651016	CHARLESTON, WV	321	0	-6	-4	3
WV	1651018	EASTERN VALLEY, WV	42	26	8	18	17
WV	1651019	OHIO RIVER VALLEY, WV	175	19	2	12	15
WV	1651020	SOUTHERN VALLEY, WV	151	19	-0	10	12
WV	1651017	WHEELING, WV	209	6	-7	-1	7
WY	0553021	WYOMING	87	28	20	24	16

OURCE: HEALTH CARE FINANCING ADMINISTRATION, OFFICE OF R: EARCH AND
EMONSTRATIONS, 1988 ESTIMATES BASED ON 1987 BMAD PROCEDURE FILE.

TABLE 4.5
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR ADDITIVE MODEL
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER	LOCALITY	CARRIER DESIGNATION	CPR ALLOWED CHARGES (IN MILLIONS)	NO GPCI	GPCI ON OVERHEAD	GPCI ON BOTH
				11986.56	-0	-0	-0
AK	01020	01	ALASKA	6.98	-28	-21	-4
AL	00510	05	BIRMINGHAM, AL	62.11	0	-5	-9
AL	00510	02	NORTH CENTRAL AL	23.84	19	11	4
AL	00510	01	NORTHEAST AL	28.69	14	6	3
AL	00510	06	RURAL AL	30.79	33	25	17
AL	00510	03	SOUTHEAST AL	39.39	16	8	1
AL	00510	04	SOUTHWEST AL	28.68	14	8	-1
AR	00520	13	ARKANSAS	133.96	15	4	-6
AZ	01030	05	FLAGSTAFF (CITY), AZ	1.25	-10	-13	-16
AZ	01030	01	PHOENIX (CITY), AZ	117.49	-13	-12	-11
AZ	01030	07	PRESCOTT (CITY), AZ	3.03	-5	-7	-11
AZ	01030	99	RURAL ARIZONA	16.64	-2	-2	-5
AZ	01030	02	TUCSON (CITY), AZ	41.98	-9	-9	-11
AZ	01030	08	YUMA (CITY), AZ	3.87	-4	-6	-10
CA	02050	26	ANAHEIM-SANTA ANA, CA	119.70	-20	-11	-4
CA	00542	14	BAKERSFIELD, CA	24.20	-17	-14	-9
CA	00542	11	FRESNO/MADERA, CA	84.88	-17	-15	-14
CA	00542	13	KINGS/TULARE, CA	14.29	-10	-8	-9
CA	02050	18	LOS ANGELES, CA	527.38	-22	-14	-5
CA	00542	03	MARIN/NAPA/SOLANO, CA	18.57	-13	-4	-2
CA	00542	10	MERCED/SURR. CNTYS, CA	21.03	-12	-10	-7
CA	00542	12	MONTEREY/SANTA CRUZ, CA	22.46	-11	-5	-1
CA	00542	01	N. COASTAL CNTYS, CA	33.93	-13	-9	-8
CA	00542	02	NE RURAL CA	32.97	-10	-9	-8
CA	00542	07	OAKLAND-BERKELEY, CA	78.89	-12	-0	5
CA	00542	27	RIVERSIDE, CA	57.01	-22	-17	-13
CA	00542	04	SACRAMENTO/SURR. CNTYS, CA	62.58	-13	-8	-3
CA	00542	15	SAN BERNADINO/E.CENTRAL CA	41.84	-18	-14	-9
CA	02050	28	SAN DIEGO/IMPERIAL, CA	124.11	-24	-20	-16
CA	00542	05	SAN FRANCISCO, CA	49.73	-11	2	9
CA	00542	06	SAN MATEO, CA	20.01	-16	-4	3
CA	02050	16	SANTA BARBARA, CA	30.22	-24	-20	-18
CA	00542	09	SANTA CLARA, CA	46.77	-17	-6	2
CA	00542	08	STOCKTON/SURR. CNTYS, CA	32.60	-16	-13	-10
CA	02050	17	VENTURA, CA	28.79	-22	-17	-11
CO	00550	01	COLORADO	90.13	21	18	18
CT	10230	04	EASTERN CONN.	15.69	5	8	8
CT	10230	01	NW AND N.CENTRAL CONN.	72.13	1	4	5
CT	10230	03	SOUTH CENTRAL CONN.	37.56	-6	-1	3
CT	10230	02	SW CONNECTICUT	24.66	-13	-7	2
DC	00580	01	D.C. + MD/VA SUBURBS	140.63	-13	-8	3
DE	00570	01	DELAWARE	27.75	9	7	13
FL	00590	03	FORT LAUDERDALE, FL	326.48	-15	-14	-15
FL	00590	04	MIAMI, FL	192.86	-21	-17	-12
FL	00590	02	N/NC FLORIDA CITIES	484.56	-6	-8	-13
FL	00590	01	RURAL FLORIDA	101.53	1	-4	-11
GA	13110	01	ATLANTA, GA	114.00	3	2	-3
GA	13110	04	RURAL GEORGIA	41.29	37	27	13
GA	13110	02	SMALL GA CITIES 02	67.44	5	-2	-10

TABLE 4.5
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR ADDITIVE MODEL
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER	LOCALITY	CARRIER DESIGNATION	CPR ALLOWED CHARGES (IN MILLIONS)	NO GPCI	GPCI ON OVERHEAD	GPCI ON BOTH
GA	13110	03	SMALL GA CITIES 03	71.33	11	3	-6
HI	01120	01	HAWAII	40.22	-11	-8	-8
IA	00640	05	DES MOINES(POLK/WARREN),IA	18.62	22	18	17
IA	00640	08	IOWA CITY (CITY LIMITS)	7.46	-2	-6	-14
IA	00640	03	NORTH CENTRAL IOWA	13.48	35	28	20
IA	00640	02	NORTHEAST IOWA	11.88	40	33	24
IA	00640	06	NORTHWEST IOWA	17.08	24	16	8
IA	00640	04	S.CEN. IA(EXCL DES MOINES)	12.76	22	14	4
IA	00640	01	SE IOWA (EXCL IOWA CITY)	13.56	32	26	20
IA	00640	07	SOUTHWEST IOWA	10.05	42	34	24
ID	05130	00	IDAHO CARRIER WIDE	1.57	6	2	-5
ID	05130	12	NORTH IDAHO	7.95	23	18	8
ID	05130	11	SOUTH IDAHO	21.07	20	16	8
IL	00621	10	CHAMPAIGN-URBANA, IL	5.68	24	21	12
IL	00621	16	CHICAGO, IL	250.62	-2	7	16
IL	00621	03	DE KALB, IL	11.76	25	22	16
IL	00621	11	DECATUR, IL	8.48	33	30	24
IL	00621	12	EAST ST. LOUIS, IL	25.58	31	32	29
IL	00621	06	KANKAKEE, IL	6.90	32	29	21
IL	00621	08	NORMAL, IL	10.23	24	24	23
IL	00621	01	NORTHWEST, IL	3.15	30	26	19
IL	00621	05	PEORIA, IL	11.93	30	33	35
IL	00621	07	QUINCY, IL	10.42	36	31	24
IL	00621	04	ROCK ISLAND, IL	9.30	28	25	23
IL	00621	02	ROCKFORD, IL	19.51	6	9	11
IL	00621	13	SOUTHEAST IL	10.80	20	16	9
IL	00621	14	SOUTHERN IL	14.72	13	9	3
IL	00621	09	SPRINGFIELD, IL	15.96	14	14	13
IL	00621	15	SUBURBAN CHICAGO, IL	52.83	11	17	22
IN	00630	01	METROPOLITAN INDIANA	122.76	-0	-5	-5
IN	00630	03	RURAL INDIANA	25.64	35	26	20
IN	00630	02	URBAN INDIANA	69.30	13	5	0
KS	00740	05	KANSAS CITY, KA	6.04	13	12	7
KS	00650	01	RURAL KANSAS	70.22	5	-1	-12
KS	00740	04	SUBURBAN KANSAS CITY, KA	10.27	2	1	-3
KY	00660	01	LEXINGTON & LOUISVILLE, KY	54.61	7	1	-3
KY	00660	03	RURAL KENTUCKY	24.21	39	31	23
KY	00660	02	SM CITIES (CITY LIMITS) KY	62.36	16	9	3
LA	00528	07	ALEXANDRIA, LA	11.82	-8	-14	-17
LA	00528	03	BATON ROUGE, LA	24.70	0	-3	-4
LA	00528	06	LAFAYETTE, LA	12.04	13	8	3
LA	00528	04	LAKE CHARLES, LA	9.11	5	-0	-6
LA	00528	05	MONROE, LA	10.81	10	3	-2
LA	00528	01	NEW ORLEANS, LA	75.40	-1	-0	-1
LA	00528	50	RURAL LOUISIANA	46.79	29	22	14
LA	00528	02	SHREVEPORT, LA	24.51	4	-1	-0
MA	00700	02	MASS.SUBURBS/RURAL(CITIES)	75.23	8	10	9
MA	00700	01	MASSACHUSETTS URBAN	208.94	-4	0	0
MD	00690	01	BALTIMORE/SURR. CNTYS, MD	108.27	-1	0	6
MD	00690	03	SOUTH + E. SHORE MD	15.08	14	14	16

TABLE 4.5
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR ADDITIVE MODEL
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER	LOCALITY	CARRIER DESIGNATION	CPR ALLOWED CHARGES (IN MILLIONS)	NO GPCI	GPCI ON OVERHEAD	GPCI ON BOTH
MD	00690	02	WESTERN MARYLAND	14.01	22	22	23
ME	21200	02	CENTRAL MAINE	15.91	23	16	1
ME	21200	01	NORTHERN MAINE	14.60	25	18	4
ME	21200	03	SOUTHERN MAINE	18.70	13	10	-0
MI	00710	01	DETROIT, MI	254.05	-2	6	18
MI	00710	02	MICHIGAN, NOT DETROIT	199.05	12	12	15
MN	00720	00	MINNESOTA CARRIER WIDE	6.07	11	5	4
MN	00720	02	NORTHERN MINNESOTA	10.86	25	19	14
MN	00720	04	SOUTHERN MINNESOTA	8.18	32	25	19
MN	10240	01	ST. PAUL-MINNEAPOLIS, MN	59.78	10	9	12
MO	00740	03	K.C. (JACKSON COUNTY), MO	45.96	2	1	-3
MO	00740	02	N. K.C. (CLAY/PLATTE), MO	6.27	7	7	2
MO	11260	03	RURAL (EXCL RURAL NW) MO	27.05	52	45	28
MO	00740	06	RURAL NW COUNTIES, MO	10.47	38	33	18
MO	11260	02	SM. E.CITIES+JEFF.CNTY,MO	26.25	17	14	8
MO	00740	01	ST. JOSEPH, MO	8.02	12	7	-5
MO	11260	01	ST. LOUIS/LG. E.CITIES, MO	150.22	12	12	9
MS	10250	01	RURAL MISSISSIPPI	53.94	52	40	26
MS	10250	02	URBAN MS (CITY LIMITS)	57.72	24	16	8
MT	00751	01	MONTANA	34.20	8	3	-5
NC	13340	00	NORTH CAROL CARRIER WIDE	122.68	-7	-16	-22
NC	13340	95	RURAL NORTH CAROLINA	87.50	47	36	23
NC	13340	94	URBAN (CITY LIMITS) NC	55.98	6	-1	-7
ND	00820	01	NORTH DAKOTA	38.38	3	-3	-11
NE	00645	00	NEBRASKA CARRIER WIDE	1.14	42	29	14
NE	00645	15	OMAHA + LINCOLN, NE	39.88	10	2	-4
NE	00645	16	RURAL NEBRASKA	9.87	67	55	36
NE	00645	17	URBAN (CNTY POP>25000) NE	17.78	27	15	4
NH	00780	40	NEW HAMPSHIRE	30.36	20	18	9
NJ	13310	02	MIDDLE NEW JERSEY	87.15	6	11	10
NJ	13310	01	NORTHERN NEW JERSEY	255.20	-4	1	9
NJ	13310	03	SOUTHERN NEW JERSEY	64.23	6	10	14
NM	01360	05	NEW MEXICO	45.56	-1	-5	-9
NV	01290	03	ELKO & ELY (CITIES), NV	0.58	-17	-15	-18
NV	01290	01	LAS VEGAS,ET AL(CITIES),NV	32.99	-24	-21	-15
NV	01290	02	RENO, ET AL (CITIES), NV	14.14	-19	-14	-13
NV	01290	99	RURAL NEVADA	0.98	2	7	11
NY	00801	01	BUFFALO/SURR. CNTYS, NY	66.01	12	9	10
NY	00803	01	MANHATTAN, NY	262.16	-39	-29	-22
NY	00801	03	N. CENTRAL CITIES, NY	96.24	7	4	3
NY	00803	02	NYC SUBURBS/LONG I., NY	461.02	-19	-7	3
NY	00803	03	POUGHKPSIE/N.NYC SUBURBS	44.56	1	3	4
NY	14330	04	QUEENS, NY	87.88	-15	-2	9
NY	00801	02	ROCHESTER/SURR. CNTYS, NY	40.39	6	6	11
NY	00801	04	RURAL NEW YORK	76.29	20	16	13
OH	16360	01	AKRON, OH	49.22	6	3	1
OH	16360	02	CINCINATI, OH	76.82	3	1	-2
OH	16360	03	CLEVELAND, OH	144.13	-7	-9	-7
OH	16360	04	COLUMBUS, OH	51.53	1	-1	-5
OH	16360	05	DAYTON, OH	43.87	6	3	3

TABLE 4.5
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR ADDITIVE MODEL
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER	LOCALITY	CARRIER DESIGNATION	CPR ALLOWED CHARGES (IN MILLIONS)	NO GPCI	GPCI ON OVERHEAD	GPCI ON BOTH
OH	16360	09	E. CENTRAL (STEUBENVL), OH	13.63	21	16	9
OH	16360	07	MANSFIELD, OH	9.30	17	12	5
OH	16360	13	MARION + SURR. CNTYS., OH	6.21	28	24	15
OH	16360	06	NORTHWEST (LIMA) OH	11.44	22	18	11
OH	16360	14	SCIOTO VALLEY, OH	12.30	11	7	2
OH	16360	15	SOUTHEAST (OHIO VALLEY) OH	17.73	22	16	9
OH	16360	08	SPRINGFIELD, OH	6.65	18	15	16
OH	16360	10	TOLEDO (LUCAS/WOOD), OH	41.38	-1	-1	-3
OH	16360	12	W. CENTR (LAKE PLAINS), OH	8.52	19	14	6
OH	16360	11	YOUNGSTOWN, OH	37.31	4	1	-2
OK	01370	01	OK CITY, ET AL (CITIES),OK	48.02	3	-2	-9
OK	01370	99	RURAL OKLAHOMA	19.43	41	32	21
OK	01370	04	SM. CITIES (NORTHERN), OK	11.65	11	2	-7
OK	01370	03	SM. CITIES (SOUTHERN), OK	16.05	15	5	-3
OK	01370	02	TULSA, ET AL (CITIES), OK	44.63	2	-3	-8
OR	01380	02	EUGENE, ET AL (CITIES), OR	20.48	-3	-3	-10
OR	01380	01	PORTLAND,ET AL (CITIES),OR	37.45	-1	-1	-2
OR	01380	99	RURAL OREGON	23.81	11	11	5
OR	01380	03	SALEM, ET AL (CITIES), OR	15.99	5	4	-1
OR	01380	12	SW OR. CITIES(CITY LIMITS)	14.30	1	-0	-6
PA	00865	02	LG. PENNSYLVANIA CITIES	422.84	2	4	6
PA	00865	01	PHILLY/PITT MED SCHS/HOSPS	155.46	-5	-3	0
PA	00865	04	RURAL PENNSYLVANIA	70.04	18	14	8
PA	00865	03	SMALL PENNSYLVANIA CITIES	167.88	10	7	3
RI	00870	01	RHODE ISLAND	59.55	8	6	8
SC	00880	01	SOUTH CAROLINA	103.83	17	7	0
SD	00820	02	SOUTH DAKOTA	34.80	16	7	-5
TN	05440	35	TENNESSEE	226.80	19	9	1
TX	00900	29	ABILENE, TX	2.75	33	24	15
TX	00900	26	AMARILLO, TX	3.31	19	12	4
TX	00900	31	AUSTIN, TX	17.61	-6	-10	-16
TX	00900	20	BEAUMONT, TX	8.50	24	19	18
TX	00900	09	BRAZORIA, TX	0.72	31	27	35
TX	00900	10	BROWNSVILLE, TX	3.47	36	27	21
TX	00900	24	CORPUS CHRISTI, TX	15.02	-10	-15	-19
TX	00900	11	DALLAS, TX	91.15	-15	-19	-20
TX	00900	12	DENTON, TX	0.97	19	16	15
TX	00900	14	EL PASO, TX	11.70	2	-6	-7
TX	00900	28	FORT WORTH, TX	36.56	1	-5	-11
TX	00900	15	GALVESTON, TX	5.02	2	-2	-6
TX	00900	16	GRAYSON, TX	1.15	34	26	15
TX	00900	18	HOUSTON, TX	129.32	-12	-15	-13
TX	00900	33	LAREDO, TX	0.46	53	44	32
TX	00900	17	LONGVIEW, TX	0.99	33	27	17
TX	00900	21	LUBBOCK, TX	9.75	-1	-9	-19
TX	00900	19	MC ALLEN, TX	4.62	42	33	14
TX	00900	23	MIDLAND, TX	0.15	44	43	51
TX	00900	02	NORTHEAST RURAL TEXAS	102.09	[illegible]	-6	-12
TX	00900	13	ODESSA, TX	0.44	[illegible]	32	35
TX	00900	25	ORANGE TX	0.37	[illegible]	50	49

TABLE 4.5
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY LOCALITY
FOR ADDITIVE MODEL
COMPARED TO CURRENT MEDICARE ALLOWED CHARGES

STATE	CARRIER	LOCALITY	CARRIER DESIGNATION	CPR ALLOWED CHARGES (IN MILLIONS)	NO GPCI	GPCI ON OVERHEAD	GPCI ON BOTH
TX	00900	30	SAN ANGELO, TX	1.27	13	6	-7
TX	00900	07	SAN ANTONIO, TX	58.36	-9	-14	-19
TX	00900	03	SOUTHEAST RURAL TEXAS	113.91	-3	-10	-16
TX	00900	06	TEMPLE, TX	0.63	48	41	29
TX	00900	08	TEXARKANA, TX	0.91	34	25	11
TX	00900	27	TYLER, TX	5.56	9	4	-0
TX	00900	32	VICTORIA, TX	0.41	13	8	3
TX	00900	22	WACO, TX	2.72	44	33	27
TX	00900	04	WESTERN RURAL TEXAS	68.25	3	-7	-15
TX	00900	34	WICHITA FALLS, TX	2.81	13	6	-2
UT	00910	09	UTAH	41.63	21	16	14
VA	10490	01	RICHMOND+CHARLOTTESVL, VA	52.30	12	6	-0
VA	10490	04	RURAL VIRGINIA	24.94	49	39	28
VA	10490	03	SM. TOWN/INDUSTRIAL VA	60.06	29	20	12
VA	10490	02	TIDEWATER+N. VA COUNTIES	55.71	16	14	11
VT	00780	50	VERMONT	18.03	21	15	0
WA	00930	04	E.CEN+NE WA (EXCL SPOKANE)	1.10	18	19	16
WA	00930	02	SEATTLE (KING CNTY), WA	65.88	-2	1	4
WA	00930	03	SPOKANE+RICHLND(CITIES),WA	33.48	-0	-0	-1
WA	00930	01	W + SE WA (EXCL SEATTLE)	106.10	-4	-4	-2
WI	00951	13	CENTRAL WISCONSIN	2.73	30	22	11
WI	00951	40	GREEN BAY, WI (NORTHEAST)	18.96	15	8	3
WI	00951	54	JANESVILLE, WI (S-CENTRAL)	9.94	18	11	4
WI	00951	19	LA CROSSE, WI (W-CENTRAL)	8.98	17	11	4
WI	00951	15	MADISON, WI (DANE COUNTY)	14.55	8	5	-0
WI	00951	46	MILWAUKEE SUBURBS, WI (SE)	23.84	10	8	10
WI	00951	04	MILWAUKEE, WI	50.67	1	-1	0
WI	00951	12	NORTHWEST WISCONSIN	6.46	31	24	15
WI	00951	60	OSHKOSH, WI (E-CENTRAL)	16.97	14	7	1
WI	00951	14	SOUTHWEST WISCONSIN	2.59	46	38	24
WI	00951	36	WAUSAU, WI (N-CENTRAL)	8.56	14	7	-0
WV	16510	16	CHARLESTON, WV	32.07	1	-2	-5
WV	16510	18	EASTERN VALLEY, WV	4.21	22	14	4
WV	16510	19	OHIO RIVER VALLEY, WV	17.48	17	9	0
WV	16510	20	SOUTHERN VALLEY, WV	15.05	15	8	-3
WV	16510	17	WHEELING, WV	20.95	6	-0	-6
WY	05530	21	WYOMING	8.68	23	18	14

SOURCE: HEALTH CARE FINANCING ADMINISTRATION, OFFICE OF RESEARCH AND DEMONSTRATIONS, 1988 ESTIMATES BASED ON 1987 BMAD PROCEDURE FILE.

TABLE 4.6

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
ALABAMA		213501013	13	7	1
	DERM	3445532	25	17	11
	GEN SURG	20703400	8	1	-4
	GEN/FAM PRACT	31554500	46	40	31
	GYN	2252021	10	3	-3
	INT MED	51555617	27	19	12
	OPHTHAL	35639113	4	-4	-8
	ORTHO SURG	13922935	3	-4	-9
	OTORHLAR	4072185	17	10	4
	PATHOLOGY	3707376	-18	-21	-26
	RADIOLOGY	19941389	-11	-17	-21
	THOR SURG	12736944	-20	-26	-29
	UROLOGY	11643333	10	3	-2
ALASKA		6984696	-28	-21	-4
	DERM	51384	-11	-3	18
	GEN SURG	561845	-31	-23	-8
	GEN/FAM PRACT	1470899	-27	-20	-1
	GYN	54993	-35	-28	-14
	INT MED	1772476	-25	-19	-0
	OPHTHAL	1366617	-41	-33	-23
	ORTHO SURG	585048	-25	-16	-2
	OTORHLAR	96555	-26	-19	-3
	PATHOLOGY	64515	39	52	88
	RADIOLOGY	638397	-29	-21	-7
	THOR SURG	5813	.	.	.
	UROLOGY	264397	-27	-19	-3
ARIZONA		184263932	-11	-10	-11
	DERM	5677559	4	4	3
	GEN SURG	14316028	-15	-14	-14
	GEN/FAM PRACT	22841154	7	9	8
	GYN	1789103	-6	-6	-7
	INT MED	32917504	-1	-0	-1
	OPHTHAL	4893093B	-26	-24	-25
	ORTHO SURG	12512824	-7	-6	-6
	OTORHLAR	2509587	20	20	20
	PATHOLOGY	3581148	-11	-9	-10
	RADIOLOGY	1912358B	-17	-16	-16
	THOR SURG	9893489	-26	-25	-25
	UROLOGY	9273076	-5	-4	-4
ARKANSAS		133957354	15	4	-6

TABLE 4.6

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	DERM	2665616	15	3	-7
	GEN SURG	13843876	0	-10	-18
	GEN/FAM PRACT	27913663	51	41	25
	GYN	1071497	5	-6	-15
	INT MED	25374061	25	14	2
	OPHTHAL	23598710	-6	-18	-24
	ORTHO SURG	7997041	9	-4	-11
	OTORHLAR	2410589	11	-0	-10
	PATHOLOGY	1550093	29	18	6
	RADIOLOGY	12251089	-3	-14	-21
	THOR SURG	7145182	-28	-37	-42
	UROLOGY	7424645	16	4	-5
CALIFORNIA		1421976829	-19	-12	-6
	DERM	49238583	-21	-16	-9
	GEN SURG	94274161	-26	-19	-14
	GEN/FAM PRACT	173912134	-3	4	13
	GYN	15044580	-18	-11	-5
	INT MED	344225102	-5	2	11
	OPHTHAL	301497747	-28	-21	-16
	ORTHO SURG	97725177	-20	-12	-7
	OTORHLAR	27455010	-13	-6	1
	PATHOLOGY	20414334	-18	-11	-4
	RADIOLOGY	133823341	-36	-30	-26
	THOR SURG	77913497	-40	-34	-30
	UROLOGY	74803379	-22	-15	-9
COLORADO		90126099	21	18	18
	DERM	2397337	21	17	16
	GEN SURG	7454263	11	9	9
	GEN/FAM PRACT	13280035	43	42	42
	GYN	905421	5	2	2
	INT MED	23154714	40	36	36
	OPHTHAL	20316785	-2	-5	-5
	ORTHO SURG	6629561	19	16	16
	OTORHLAR	1570634	18	14	14
	PATHOLOGY	142363	-21	-22	-22
	RADIOLOGY	6636010	9	6	6
	THOR SURG	2819975	3	-1	-1
	UROLOGY	4459249	20	17	17
CONNECTICUT		150038484	-2	1	4
	DERM	4153977	-2	1	5
	GEN SURG	14418461	-3	1	4
	GEN/FAM PRACT	10567109	18	24	27
	GYN	1869382	-5	-2	0

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	INT MED	38842219	16	19	23
	OPHTHAL	27911385	-13	-9	-7
	ORTHO SURG	11700777	3	8	10
	OTORHLAR	3623205	-1	2	5
	PATHOLOGY	1956423	18	22	26
	RADIOLOGY	21714129	-31	-28	-26
	THOR SURG	2939827	-26	-23	-22
	UROLOGY	9466970	-5	-1	2
DELAWARE		27752216	9	7	13
	DERM	653210	11	9	15
	GEN SURG	2814450	-25	-25	-21
	GEN/FAM PRACT	3042996	47	47	57
	GYN	372588	28	25	31
	INT MED	7454229	31	28	36
	OPHTHAL	4645114	3	1	5
	ORTHO SURG	1562884	-15	-16	-13
	OTORHLAR	502825	-7	-9	-4
	PATHOLOGY	287728	15	14	21
	RADIOLOGY	3598047	-22	-23	-19
	THOR SURG	1068179	2	0	5
	UROLOGY	1470484	2	1	6
DISTRICT OF COLUMBIA		140633604	-13	-8	3
	DERM	3163087	-8	-4	8
	GEN SURG	8456377	-14	-8	2
	GEN/FAM PRACT	10337119	5	12	27
	GYN	1348879	2	8	20
	INT MED	39207858	4	9	23
	OPHTHAL	29839679	-30	-25	-19
	ORTHO SURG	7641461	2	10	20
	OTORHLAR	2048267	8	14	27
	PATHOLOGY	2659540	-19	-14	-3
	RADIOLOGY	17759925	-32	-27	-19
	THOR SURG	9540367	-36	-31	-25
	UROLOGY	7604971	-17	-11	-1
FLORIDA		1105427939	-10	-11	-13
	DERM	37170176	1	-0	-2
	GEN SURG	85818084	-20	-21	-23
	GEN/FAM PRACT	164365561	-1	0	-3
	GYN	11154595	-6	-7	-9
	INT MED	292325701	-5	-6	-8
	OPHTHAL	206589784	-15	-16	-17
	ORTHO SURG	70534239	-8	-8	-10
	OTORHLAR	20588712	3	2	0
	PATHOLOGY	30848540	-24	-24	-26

TABLE 4.6

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	RADIOLOGY	84228193	-31	-32	-33
	THOR SURG	31536849	-25	-26	-27
	UROLOGY	60842581	-7	-8	-10
GEORGIA		294051172	10	5	-3
	DERM	3764183	23	17	9
	GEN SURG	26726697	13	7	-1
	GEN/FAM PRACT	29722857	59	52	36
	GYN	2584296	23	16	7
	INT MED	95319444	21	16	6
	OPHTHAL	49812265	-16	-21	-25
	ORTHO SURG	15626611	17	11	4
	OTORHLAR	2940140	23	16	7
	PATHOLOGY	8561375	-35	-37	-42
	RADIOLOGY	30491246	-20	-24	-29
	THOR SURG	11031175	-8	-12	-16
	UROLOGY	15045561	14	9	1
HAWAII		40215013	-11	-8	-8
	DERM	718751	-13	-11	-10
	GEN SURG	3259596	-13	-9	-9
	GEN/FAM PRACT	3866005	13	18	19
	GYN	493537	2	6	6
	INT MED	14410338	-7	-5	-4
	OPHTHAL	7023994	-22	-18	-18
	ORTHO SURG	1572254	-2	3	3
	OTORHLAR	799197	-14	-11	-11
	PATHOLOGY	701299	-32	-29	-29
	RADIOLOGY	3566183	-30	-27	-26
	THOR SURG	1830490	-14	-10	-9
	UROLOGY	1883338	-18	-15	-14
IDAHO		30580896	20	16	7
	DERM	592816	14	9	0
	GEN SURG	2724672	8	4	-3
	GEN/FAM PRACT	5174372	43	41	28
	GYN	344348	11	6	-1
	INT MED	6778159	39	33	22
	OPHTHAL	5988321	4	-1	-6
	ORTHO SURG	2752718	10	5	-1
	OTORHLAR	558686	26	21	12
	PATHOLOGY	372869	-14	-16	-23
	RADIOLOGY	2035165	-2	-6	-12
	THOR SURG	1228052	-11	-15	-20
	UROLOGY	1915365	25	20	12

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
ILLINOIS		467875098	9	13	18
	DERM	6520817	28	33	39
	GEN SURG	49333298	9	13	16
	GEN/FAM PRACT	51662382	46	53	58
	GYN	5211109	9	13	17
	INT MED	116761854	29	34	41
	OPHTHAL	101278692	-26	-22	-20
	ORTHO SURG	28801173	10	17	20
	OTORHLAR	6492674	20	25	29
	PATHOLOGY	11944285	-3	1	4
	RADIOLOGY	36371375	4	9	13
	THOR SURG	14554290	-28	-22	-19
	UROLOGY	26087444	2	7	10
INDIANA		217706953	8	2	-0
	DERM	2891249	32	25	22
	GEN SURG	16301058	4	-2	-5
	GEN/FAM PRACT	35504650	49	44	39
	GYN	1661762	1	-6	-8
	INT MED	40959535	27	20	17
	OPHTHAL	47611593	-11	-18	-19
	ORTHO SURG	13680872	9	2	-0
	OTORHLAR	3504527	23	16	13
	PATHOLOGY	11119927	-43	-45	-46
	RADIOLOGY	20817374	-7	-12	-14
	THOR SURG	9979799	-36	-40	-41
	UROLOGY	11898476	1	-4	-6
IOWA		104879026	28	21	14
	DERM	1461046	30	22	15
	GEN SURG	10022599	17	11	5
	GEN/FAM PRACT	21143829	78	73	60
	GYN	738703	8	2	-4
	INT MED	18940367	37	30	23
	OPHTHAL	20935041	-3	-10	-14
	ORTHO SURG	6782850	26	18	13
	OTORHLAR	1641444	33	26	19
	PATHOLOGY	3486276	-22	-25	-29
	RADIOLOGY	10063726	4	-3	-8
	THOR SURG	2329032	-3	-10	-15
	UROLOGY	6722623	20	13	7
KANSAS		86523096	5	-0	-9
	DERM	1260114	-8	-14	-22
	GEN SURG	7585748	-1	-6	-14
	GEN/FAM PRACT	16663851	31	27	13

TABLE 4.6

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	GYN	731801	-8	-13	-20
	INT MED	15061730	22	16	5
	OPHTHAL	17377210	-9	-15	-21
	ORTHO SURG	6005397	6	-0	-8
	OTORHLAR	1367980	6	1	-8
	PATHOLOGY	2140925	-35	-37	-44
	RADIOLOGY	8636136	-22	-26	-32
	THOR SURG	4317855	-7	-13	-20
	UROLOGY	4559106	3	-3	-12
KENTUCKY		141184565	16	10	4
	DERM	3419272	9	2	-3
	GEN SURG	16052028	7	1	-4
	GEN/FAM PRACT	27060059	48	43	34
	GYN	1233247	17	9	4
	INT MED	28717487	39	31	24
	OPHTHAL	23805469	-16	-23	-25
	ORTHO SURG	8519972	14	6	2
	OTORHLAR	1778594	21	14	8
	PATHOLOGY	3565751	-34	-37	-40
	RADIOLOGY	15264344	-10	-16	-20
	THOR SURG	3185114	2	-5	-9
	UROLOGY	7224706	22	15	9
LOUISIANA		215172325	7	4	1
	DERM	3892912	40	36	32
	GEN SURG	17840283	7	4	1
	GEN/FAM PRACT	22364712	58	54	45
	GYN	1712365	31	27	24
	INT MED	42401050	28	25	21
	OPHTHAL	57248983	-23	-26	-28
	ORTHO SURG	10985709	31	27	25
	OTORHLAR	2657266	42	38	34
	PATHOLOGY	6447953	-16	-17	-20
	RADIOLOGY	22707111	-16	-19	-20
	THOR SURG	12019039	-12	-14	-16
	UROLOGY	11929137	22	18	15
MAINE		49206341	20	14	2
	DERM	495125	67	59	41
	GEN SURG	5815714	15	10	-2
	GEN/FAM PRACT	6919181	46	43	24
	GYN	455209	-1	-7	-17
	INT MED	8709750	46	39	21
	OPHTHAL	11196871	4	-2	-10
	ORTHO SURG	3745079	22	16	5
	OTORHLAR	740522	37	30	15

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	PATHOLOGY	146B511	-47	-49	-56
	RADIOLOGY	4260B92	9	3	-7
	THOR SURG	2300146	-17	-21	-27
	UROLOGY	2952218	13	B	-4
MARYLAND		137356703	3	4	9
	DERM	2355553	16	16	21
	GEN SURG	16B92992	-7	-6	-2
	GEN/FAM PRACT	B698933	46	49	55
	GYN	2244338	7	7	13
	INT MED	49007902	1B	18	24
	OPHTHAL	24644132	-14	-13	-10
	ORTHO SURG	7780900	3	4	8
	OTORHLAR	3202813	-14	-14	-10
	PATHOLOGY	36905	.	.	.
	RADIOLOGY	7735921	-35	-34	-31
	THOR SURG	4123684	-5	-5	-2
	UROLOGY	9549460	-12	-11	-B
MASSACHUSETTS		2B4166919	-1	3	3
	DERM	519470B	B	11	11
	GEN SURG	27124980	0	5	5
	GEN/FAM PRACT	11352129	32	37	37
	GYN	3049211	-6	-3	-3
	INT MED	80110776	13	16	16
	OPHTHAL	7212B375	-1B	-14	-14
	ORTHO SURG	19673022	11	16	16
	OTORHLAR	5686190	9	12	12
	PATHOLOGY	517621B	-22	-19	-19
	RADIOLOGY	27876712	-16	-13	-12
	THOR SURG	9941275	-1B	-14	-13
	UROLOGY	15033639	2	6	6
MICHIGAN		453104101	4	9	17
	DERM	84BB909	-0	3	12
	GEN SURG	41381867	7	13	20
	GEN/FAM PRACT	72798454	25	30	39
	GYN	4425982	8	13	22
	INT MED	121304307	26	30	42
	OPHTHAL	103177122	-30	-26	-22
	ORTHO SURG	20209544	11	16	22
	OTORHLAR	5383950	15	20	29
	PATHOLOGY	7399155	-27	-24	-18
	RADIOLOGY	26756280	-15	-12	-7
	THOR SURG	13670902	-2	2	8
	UROLOGY	24909671	4	8	16

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
MINNESOTA		84878815	14	11	12
	DERM	793387	47	44	46
	GEN SURG	7016856	4	2	2
	GEN/FAM PRACT	11549654	35	34	34
	GYN	773024	6	4	6
	INT MED	20377088	22	19	22
	OPHTHAL	17612709	6	4	5
	ORTHO SURG	6578635	11	8	8
	OTORHLAR	1298845	13	10	12
	PATHOLOGY	1889298	21	19	21
	RADIOLOGY	6760365	4	1	2
	THOR SURG	4210528	-26	-27	-26
	UROLOGY	4710373	10	7	7
MISSISSIPPI		111654214	38	28	17
	DERM	1412271	93	76	60
	GEN SURG	12012055	34	24	14
	GEN/FAM PRACT	23589776	82	72	54
	GYN	966180	43	31	21
	INT MED	22688772	60	49	35
	OPHTHAL	24475293	-6	-15	-21
	ORTHO SURG	5321164	43	30	22
	OTORHLAR	1358570	56	44	32
	PATHOLOGY	1556163	25	19	8
	RADIOLOGY	10132202	-9	-17	-23
	THOR SURG	2340408	1	-8	-14
	UROLOGY	5451299	41	31	20
MISSOURI		274244169	16	14	9
	DERM	2716724	35	33	28
	GEN SURG	22515656	16	15	9
	GEN/FAM PRACT	26956286	69	67	51
	GYN	2524674	18	16	12
	INT MED	88638542	27	26	20
	OPHTHAL	51589209	-5	-6	-9
	ORTHO SURG	14115206	18	17	13
	OTORHLAR	3348798	31	30	25
	PATHOLOGY	5778653	-27	-27	-30
	RADIOLOGY	26171559	-16	-17	-20
	THOR SURG	13159416	-13	-14	-16
	UROLOGY	14473621	12	12	7
MONTANA		34202311	8	3	-5
	DERM	540206	7	1	-7
	GEN SURG	3268055	-1	-5	-12

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	GEN/FAM PRACT	4534819	31	28	17
	GYN	304674	-5	-10	-17
	INT MED	8427576	17	11	2
	OPHTHAL	7016567	5	-2	-7
	ORTHO SURG	2456086	3	-3	-9
	OTORHLAR	380802	24	17	9
	PATHOLOGY	705622	-12	-15	-22
	RADIOLOGY	3176364	-7	-12	-18
	THOR SURG	1609822	-30	-34	-38
	UROLOGY	1682590	8	2	-5
NEBRASKA		68670341	23	14	4
	DERM	1108012	42	32	22
	GEN SURG	7299810	8	-0	-8
	GEN/FAM PRACT	12757461	67	58	39
	GYN	541058	28	18	9
	INT MED	15955821	29	20	10
	OPHTHAL	11893065	4	-6	-11
	ORTHO SURG	4436164	26	15	7
	OTORHLAR	1276023	33	23	13
	PATHOLOGY	1808013	-25	-29	-35
	RADIOLOGY	5546407	-24	-30	-35
	THOR SURG	2009380	-8	-16	-20
	UROLOGY	3645505	24	14	5
NEVADA		48695505	-22	-18	-14
	DERM	1419671	-11	-8	-2
	GEN SURG	3770245	-25	-21	-17
	GEN/FAM PRACT	6378643	-5	-1	6
	GYN	403583	-19	-15	-11
	INT MED	847859	-7	-4	2
	OPHTHAL	9534849	-31	-27	-24
	ORTHO SURG	3566192	-22	-18	-14
	OTORHLAR	794569	-14	-10	-5
	PATHOLOGY	1417846	-26	-22	-18
	RADIOLOGY	6277172	-40	-37	-34
	THOR SURG	3403264	-34	-31	-28
	UROLOGY	3011537	-24	-20	-16
NEW HAMPSHIRE		30360875	20	18	9
	DERM	764642	15	11	2
	GEN SURG	3374701	11	10	1
	GEN/FAM PRACT	4380086	46	45	31
	GYN	259070	-1	-3	-11
	INT MED	5843043	39	35	23
	OPHTHAL	6516297	11	8	1
	ORTHO SURG	2050755	23	20	12

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	OTORHLAR	465714	32	28	18
	PATHOLOGY	980959	-25	-26	-32
	RADIOLOGY	2873863	3	0	-7
	THOR SURG	705779	10	7	0
	UROLOGY	1871293	10	8	-0
NEW JERSEY		406583608	-0	5	12
	DERM	8441667	1	5	13
	GEN SURG	41810724	-13	-7	-1
	GEN/FAM PRACT	28732252	51	59	72
	GYN	4042214	-1	3	10
	INT MED	129681015	13	17	26
	OPHTHAL	74842184	-14	-8	-3
	ORTHO SURG	22973437	6	13	19
	OTORHLAR	6719483	4	8	16
	PATHOLOGY	6044599	-7	-2	6
	RADIOLOGY	40150499	-26	-22	-17
	THOR SURG	14876238	-40	-35	-32
	UROLOGY	25654829	-7	-1	5
NEW MEXICO		45563517	-1	-5	-9
	DERM	1098926	5	-1	-5
	GEN SURG	4149091	-1	-5	-9
	GEN/FAM PRACT	6065715	31	27	21
	GYN	525475	-2	-8	-11
	INT MED	9162213	22	17	11
	OPHTHAL	11199976	-26	-30	-33
	ORTHO SURG	3702873	-2	-8	-11
	OTORHLAR	626035	13	8	3
	PATHOLOGY	465461	-35	-37	-40
	RADIOLOGY	4044480	-24	-28	-30
	THOR SURG	1847034	-18	-23	-25
	UROLOGY	2463379	6	1	-3
NEW YORK		1134552727	-15	-7	-1
	DERM	32971911	-27	-20	-12
	GEN SURG	109537814	-26	-20	-15
	GEN/FAM PRACT	74533043	18	27	36
	GYN	14646230	-13	-6	0
	INT MED	363828398	3	10	19
	OPHTHAL	223300747	-33	-25	-20
	ORTHO SURG	60994352	-23	-15	-10
	OTORHLAR	20711362	-12	-4	4
	PATHOLOGY	7152213	9	15	22
	RADIOLOGY	109609853	-30	-22	-17
	THOR SURG	39698928	-45	-38	-35
	UROLOGY	64434214	-18	-11	-5

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
NORTH CAROLINA		266159883	13	4	-4
	DERM	5060654	31	19	9
	GEN SURG	32244261	-8	-15	-21
	GEN/FAM PRACT	29441472	80	70	54
	GYN	2876349	16	6	-2
	INT MED	54083215	42	31	20
	OPHTHAL	62751099	-16	-25	-30
	ORTHO SURG	17638007	14	3	-3
	OTORHLAR	3859916	30	18	9
	PATHOLOGY	5169234	6	-1	-10
	RADIOLOGY	26259209	-12	-21	-26
	THOR SURG	7168934	-33	-39	-42
	UROLOGY	16239942	13	3	-5
NORTH DAKOTA		38383473	3	-3	-11
	DERM	552131	9	2	-7
	GEN SURG	3737880	9	2	-5
	GEN/FAM PRACT	6870247	19	15	4
	GYN	534334	11	3	-5
	INT MED	8851749	10	3	-6
	OPHTHAL	8002160	-12	-19	-24
	ORTHO SURG	2374155	5	-3	-9
	OTORHLAR	567127	20	12	3
	PATHOLOGY	178121	-32	-35	-41
	RADIOLOGY	2324516	-1	-8	-15
	THOR SURG	1967863	-29	-35	-39
	UROLOGY	2295614	3	-3	-11
OHIO		530045828	3	0	-1
	DERM	7281227	18	14	13
	GEN SURG	52888091	-3	-5	-7
	GEN/FAM PRACT	74766049	34	33	29
	GYN	4859394	12	9	7
	INT MED	122664100	21	17	15
	OPHTHAL	99503381	-18	-21	-22
	ORTHO SURG	30471731	1	-3	-4
	OTORHLAR	7664064	14	11	9
	PATHOLOGY	14123609	-12	-13	-14
	RADIOLOGY	56018534	-16	-18	-19
	THOR SURG	24737942	-29	-31	-32
	UROLOGY	30329184	-3	-5	-7
OKLAHOMA		139785806	10	3	-4
	DERM	2720960	32	23	15

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	GEN SURG	11272307	16	9	2
	GEN/FAM PRACT	24066842	39	33	23
	GYN	1297797	11	4	-3
	INT MED	31234145	12	5	-2
	OPHTHAL	29417198	-8	-15	-20
	ORTHO SURG	8362684	14	6	1
	OTORHLAR	1795615	23	15	8
	PATHOLOGY	3139470	-19	-22	-27
	RADIOLOGY	9356744	-2	-8	-14
	THOR SURG	8796448	-21	-27	-30
	UROLOGY	7852802	14	7	0
OREGON		112034983	2	2	-2
	DERM	2259571	11	10	5
	GEN SURG	10236452	-3	-3	-6
	GEN/FAM PRACT	16493386	17	18	12
	GYN	1191198	1	1	-3
	INT MED	24336848	16	15	9
	OPHTHAL	26379280	-15	-15	-18
	ORTHO SURG	7989851	4	4	1
	OTORHLAR	1970508	11	11	6
	PATHOLOGY	1160988	32	34	29
	RADIOLOGY	8767309	-6	-6	-10
	THOR SURG	4240544	-30	-30	-31
	UROLOGY	6045494	9	10	5
PENNSYLVANIA		816219142	4	4	4
	DERM	15957053	8	8	8
	GEN SURG	62179894	-8	-7	-7
	GEN/FAM PRACT	110803538	41	43	42
	GYN	7753703	13	13	14
	INT MED	217843842	19	19	19
	OPHTHAL	135375030	-13	-12	-12
	ORTHO SURG	43762164	2	3	3
	OTORHLAR	14002216	10	11	12
	PATHOLOGY	15687829	-10	-9	-9
	RADIOLOGY	89334305	-26	-26	-26
	THOR SURG	45343931	-32	-32	-31
	UROLOGY	41969467	9	10	10
RHODE ISLAND		59553170	8	6	8
	DERM	1196843	22	19	21
	GEN SURG	6564896	-5	-6	-4
	GEN/FAM PRACT	3887049	17	17	20
	GYN	515510	10	7	9
	INT MED	17779007	15	12	14
	OPHTHAL	11470447	4	1	3

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	ORTHO SURG	3487973	20	18	20
	OTORHLAR	1677897	-1	-4	-2
	PATHOLOGY	632687	76	75	78
	RADIOLOGY	7354147	-7	-9	-7
	THOR SURG	1849307	8	6	7
	UROLOGY	2794061	12	10	12
SOUTH CAROLINA		103826404	17	7	0
	DERM	3939283	-5	-13	-20
	GEN SURG	9976755	4	-5	-11
	GEN/FAM PRACT	13650356	82	72	58
	GYN	975150	12	1	-5
	INT MED	20842665	39	28	19
	OPHTHAL	21891565	-7	-17	-22
	ORTHO SURG	6410747	11	0	-6
	OTORHLAR	1334628	35	23	15
	PATHOLOGY	2752094	-30	-34	-39
	RADIOLOGY	8517595	-4	-13	-18
	THOR SURG	5987959	-22	-30	-34
	UROLOGY	6408029	20	9	2
SOUTH DAKOTA		34804906	16	7	-5
	DERM	419117	4	-5	-16
	GEN SURG	3943795	10	1	-9
	GEN/FAM PRACT	6605625	48	40	22
	GYN	275867	14	4	-7
	INT MED	5383483	50	39	21
	OPHTHAL	7766783	-10	-20	-27
	ORTHO SURG	2625683	12	1	-8
	OTORHLAR	358074	29	18	4
	PATHOLOGY	113809	-25	-29	-38
	RADIOLOGY	3199181	-5	-13	-22
	THOR SURG	1563535	-23	-31	-37
	UROLOGY	2445186	3	-5	-15
TENNESSEE		226803159	19	9	1
	DERM	3401275	40	28	18
	GEN SURG	24104788	17	8	0
	GEN/FAM PRACT	23957902	64	56	43
	GYN	2343442	11	1	-6
	INT MED	51542208	49	38	27
	OPHTHAL	41396957	-8	-18	-22
	ORTHO SURG	14269706	25	13	7
	OTORHLAR	3914430	28	17	9
	PATHOLOGY	9942327	-30	-35	-40
	RADIOLOGY	23823273	-18	-26	-30
	THOR SURG	13080071	-11	-20	-25

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	UROLOGY	14047980	21	11	4
TEXAS		700944200	-3	-10	-13
	DERM	11007376	30	21	15
	GEN SURG	47975794	3	-3	-7
	GEN/FAM PRACT	79726289	46	40	31
	GYN	5948198	2	-5	-9
	INT MED	125408222	13	7	3
	OPHTHAL	204437844	-27	-33	-35
	ORTHO SURG	37684483	7	-1	-4
	OTORHLAR	10125132	9	1	-4
	PATHOLOGY	20209004	-26	-30	-33
	RADIOLOGY	67953250	-20	-26	-29
	THOR SURG	47663052	-27	-33	-35
	UROLOGY	35525045	9	1	-3
UTAH		41631364	21	16	14
	DERM	1337353	3	-1	-3
	GEN SURG	3385532	7	3	2
	GEN/FAM PRACT	4384554	47	44	42
	GYN	466389	7	2	1
	INT MED	9162965	40	34	32
	OPHTHAL	9493000	19	13	11
	ORTHO SURG	3788803	8	4	2
	OTORHLAR	794043	15	11	9
	PATHOLOGY	769571	13	11	9
	RADIOLOGY	3161393	5	1	-1
	THOR SURG	2466714	-16	-20	-21
	UROLOGY	2263385	24	19	17
VERMONT		18030135	21	15	0
	DERM	281875	28	20	4
	GEN SURG	2065825	8	3	-10
	GEN/FAM PRACT	2284412	49	44	22
	GYN	161553	10	4	-9
	INT MED	5168756	40	32	13
	OPHTHAL	3618759	5	-2	-12
	ORTHO SURG	1137893	18	11	-1
	OTORHLAR	257894	20	14	-1
	PATHOLOGY	238414	8	4	-11
	RADIOLOGY	1593054	-9	-15	-24
	THOR SURG	33	.	.	.
	UROLOGY	1182275	6	-0	-12
VIRGINIA		193019829	23	17	10

TABLE 4.6
PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	DERM	2651448	37	29	22
	GEN SURG	20192735	7	2	-3
	GEN/FAM PRACT	29291634	59	53	43
	GYN	1745106	23	16	10
	INT MED	53287553	38	30	23
	OPHTHAL	30264751	5	-2	-6
	ORTHO SURG	12776161	24	16	11
	OTORHLAR	2907017	35	27	20
	PATHOLOGY	4450806	-21	-24	-29
	RADIOLOGY	18924546	-14	-19	-23
	THOR SURG	4564802	-3	-8	-11
	UROLOGY	10559218	21	14	8
WASHINGTON		206549943	-2	-2	0
	DERM	3007390	1	0	2
	GEN SURG	18818361	-21	-20	-18
	GEN/FAM PRACT	28434684	19	21	24
	GYN	1840755	-10	-10	-8
	INT MED	46843372	12	11	14
	OPHTHAL	41135099	-11	-10	-9
	ORTHO SURG	14185274	-1	-0	2
	OTORHLAR	3390180	29	29	31
	PATHOLOGY	3964627	-17	-16	-14
	RADIOLOGY	26034067	-18	-17	-16
	THOR SURG	6467901	-27	-27	-27
	UROLOGY	10988757	-6	-6	-4
WEST VIRGINIA		89752696	9	3	-3
	DERM	932714	16	9	3
	GEN SURG	10511161	16	10	3
	GEN/FAM PRACT	10502255	46	41	30
	GYN	566761	6	-1	-7
	INT MED	21302723	29	22	14
	OPHTHAL	17594576	-21	-27	-30
	ORTHO SURG	4501655	17	9	4
	OTORHLAR	1572698	14	7	1
	PATHOLOGY	1867879	-8	-11	-17
	RADIOLOGY	10807099	-22	-27	-31
	THOR SURG	1707276	3	-4	-8
	UROLOGY	6414535	5	-1	-7
WISCONSIN		164244063	11	6	4
	DERM	2836559	12	7	4
	GEN SURG	15063450	4	0	-3
	GEN/FAM PRACT	22387564	41	37	31
	GYN	1509122	-1	-5	-6
	INT MED	38728898	23	18	16

TABLE 4.6

PERCENT CHANGE IN MEDICARE ALLOWED CHARGES BY SPECIALTY AND BY STATE FOR THREE HCFA ADDITIVE MODELS

STATE	SPECIALTY	CPR DOLLARS	NO GPCI	OH GPCI	GPCI ON BOTH
	OPHTHAL	27961637	2	-4	-6
	ORTHO SURG	12170510	4	-1	-3
	OTORHLAR	2984907	12	7	5
	PATHOLOGY	3858842	8	5	3
	RADIOLOGY	15695770	2	-3	-5
	THOR SURG	10213373	-35	-37	-38
	UROLOGY	9999590	3	-1	-3
WYOMING		8676758	23	18	14
	DERM	153157	1	-5	-8
	GEN SURG	985683	7	2	-1
	GEN/FAM PRACT	2018211	40	36	32
	GYN	39114	.	.	.
	INT MED	2306326	33	27	23
	OPHTHAL	602999	23	15	13
	ORTHO SURG	807787	14	7	5
	OTORHLAR	117933	33	26	22
	PATHOLOGY	140781	-29	-31	-33
	RADIOLOGY	854801	-7	-12	-14
	UROLOGY	643430	26	20	17

SOURCE: HEALTH CARE FINANCING ADMINISTRATION, OFFICE OF RESEARCH AND DEMONSTRATIONS, 1S BASED ON 1987 BMAD PROCEDURE FILE.

Table 4.7A1

Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Multiplicative Model, with GPCI

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to +10%	10% to 30%	>30%
		Percent of Allowed Charges				
All Physicians 1/	12,560	30%	17%	16%	14%	23%
Dermatology	317	3	23	42	21	11
Fam/Gen Practice	3,335	1	2	7	18	73
General Surgery	1,163	27	36	21	8	8
Gynecology	1,072	11	29	27	16	17
Internal Medicine	2,904	2	5	18	30	45
Ophthalmology	701	74	21	4	1	0
Ortho. Surgery	665	3	28	42	19	8
Otorhinolar.	315	1	20	33	23	22
Pathology	178	65	19	7	7	2
Radiology	609	70	24	4	1	1
Thoracic surgery	165	88	8	2	1	1
Urology	368	1	29	51	17	3

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7A2

Distribution of Providers Who Gain or-Lose Medicare Allowed Charges, by Specialty for HCFA Multiplicative Model, with GPCI

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to +10%	10% to 30%	>30%
		Percent of Providers				
All Physicians 1/	12,560	12%	15%	18%	17%	38%
Dermatology	317	4	16	36	24	20
Fam/Gem Practice	3,335	2	3	7	15	73
General Surgery	1,163	17	31	22	12	18
Gynecology	1,072	11	23	23	17	26
Internal Medicine	2,904	5	5	17	29	45
Ophthalmology	701	47	32	9	5	7
Ortho. Surgery	665	3	20	38	21	18
Otorhinolar.	315	2	11	32	25	29
Pathology	178	51	23	12	8	6
Radiology	609	58	24	9	4	5
Thoracic surgery	165	67	15	5	5	8
Urology	368	2	27	43	16	12

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7B1

Distribution of Medicare Allowed Charges for Providers Who Gain or Lose by Specialty for HCFA Additive Model, No GPCI

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30 to -10	-10% to +10%	10% to 30%	>30%
		Percent of Allowed Charges				
All Physicians 1/	12,560	16%	28%	24%	16%	16%
Dermatology	317	13	20	35	19	12
Fam/Gen Practice	3,335	2	9	19	20	49
General Surgery	1,163	20	33	24	12	11
Gynecology	1,072	14	26	31	14	15
Internal Medicine	2,904	6	12	29	27	26
Ophthalmology	701	21	53	18	7	1
Ortho. Surgery	665	9	25	35	23	8
Otorhinolar.	315	6	23	32	18	19
Pathology	178	47	28	8	10	7
Radiology	609	32	40	20	5	2
Thoracic surgery	165	55	26	12	4	3
Urology	368	11	22	38	19	10

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7B2

Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Additive Model, No GPCI

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30 to -10	-10% to +10%	10% to 30%	>30%
		Percent of Providers				
All Physicians 1/	12,560	11%	18%	23%	19%	29%
Dermatology	317	12	16	28	22	21
Fam/Gen Practice	3,335	4	9	16	20	50
General Surgery	1,163	14	27	22	14	23
Gynecology	1,072	12	22	25	17	23
Internal Medicine	2,904	8	13	28	25	27
Ophthalmology	701	16	37	23	9	15
Ortho. Surgery	665	7	19	31	25	18
Otorhinolar.	315	6	18	28	21	26
Pathology	178	38	22	15	12	12
Radiology	609	29	28	22	11	11
Thoracic surgery	165	35	25	16	7	17
Urology	368	8	26	29	21	16

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7C1

Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Additive Model, GPCI on Overhead Costs

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to +10%	10% to 30%	>30%
		Percent of Allowed Charges				
All Physicians 1/	12,560	14%	29%	25%	17%	16%
Dermatology	317	10	18	45	15	12
Fam/Gen Practice	3,335	2	7	19	24	48
General Surgery	1,163	17	37	23	11	11
Gynecology	1,072	12	30	29	14	15
Internal Medicine	2,904	4	11	30	31	24
Ophthalmology	701	19	55	18	6	1
Ortho. Surgery	665	4	27	43	20	7
Otorhinolar.	315	6	22	36	21	15
Pathology	178	41	34	11	6	9
Radiology	609	34	45	15	4	2
Thoracic surgery	165	53	27	15	2	3
Urology	368	2	26	50	15	7

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7C2

Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Additive Model, GPCI on Overhead Costs

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to +10%	10% to 30%	>30%
		Percent of Providers				
All Physicians 1/	12,560	9%	19%	24%	20%	29%
Dermatology	317	8	16	34	20	21
Fam/Gen Practice	3,335	4	8	16	22	51
General Surgery	1,163	11	30	23	13	23
Gynecology	1,072	12	23	24	17	23
Internal Medicine	2,904	7	12	28	28	25
Ophthalmology	701	11	39	26	9	15
Ortho. Surgery	665	4	20	37	21	17
Otorhinolar.	315	4	17	33	22	23
Pathology	178	36	25	16	10	14
Radiology	609	29	31	20	9	11
Thoracic surgery	165	30	28	21	4	17
Urology	368	2	26	41	16	15

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7D1

Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for HCFA Additive Model with GPCI on both Components

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-10% to -30%	-10% to +10%	10% to 30%	>30%
		Percent of Allowed Charges				
All Physicians 1/	12,560	14%	28%	26%	17%	15%
Dermatology	317	6	23	40	20	11
Fam/Gen Practice	3,335	2	6	22	28	43
General Surgery	1,163	16	39	24	10	11
Gynecology	1,072	12	30	25	16	16
Internal Medicine	2,904	4	11	29	31	25
Ophthalmology	701	22	53	19	4	2
Ortho. Surgery	665	4	29	41	20	7
Otorhinolar.	315	1	27	34	23	15
Pathology	178	45	29	11	5	9
Radiology	609	32	40	21	4	2
Thoracic surgery	165	59	20	16	2	3
Urology	368	1	27	50	18	4

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7D2

Distribution of Providers Who Gain or Lose Medicare Allowed Charges, by Specialty for HCFA Additive Model with GPCI on Both Components

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-10% to -30%	-10% to +10%	10% to 30%	>30%
		Percent of Providers				
All Physicians 1/	12,560	9%	18%	25%	20%	28%
Dermatology	317	5	17	35	23	19
Fam/Gen Practice	3,335	4	7	18	25	46
General Practice	1,637	5	9	17	21	47
General Surgery	1,163	10	31	23	13	23
Gynecology	1,072	12	24	22	18	25
Internal Medicine	2,904	6	11	28	28	27
Ophthalmology	701	11	38	27	8	16
Ortho. Surgery	665	3	21	37	21	18
Otorhinolar.	315	2	17	34	24	22
Pathology	178	36	27	15	9	14
Radiology	609	29	31	19	9	11
Thoracic surgery	165	33	22	22	6	16
Urology	368	2	26	43	17	12

1/ All physicians total includes pediatrics and psychiatry (not shown). Excludes allergy and rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets. Rows may not sum to 100 percent due to rounding. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1988 estimates based on 1987 BMAD provider file.

Table 4.7E1

Distribution of Medicare Allowed Charges for Providers Who Gain or Lose, by Specialty for Charge-based RVS Model with Interim GPCI 1/

Specialty	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-10% to 30%	-10% to +10%	10% to 30%	>30%
		Percent of Allowed Charges				
All Physicians 2/	11,874	4%	30%	43%	17%	6%
Dermatology	298	6	24	34	13	23
Family Practice	3,453	3	15	37	30	16
General Surgery	1,181	4	21	46	23	6
Gynecology	1,014	3	20	38	26	13
Internal Medicine	2,889	4	33	44	16	3
Ophthalmology	701	2	25	55	16	2
Ortho. Surgery	620	2	27	51	18	3
Otorhinolar.	298	2	27	48	18	6
Pathology	141	14	32	25	17	13
Radiology	604	3	33	43	17	5
Thoracic surgery	169	9	42	38	6	6
Urology	356	2	25	47	23	2

1/ This table uses the interim GPCI based on 1 percent Census data.

2/ All physicians total includes pediatrics not shown. Excludes psychiatry, allergy, rheumatology, anesthesiology, and oral surgeons.

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offset. Rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges. Provider sample size may affect the precision of the estimates in certain low volume specialties.

SOURCE: 1988 estimates based on 1986 BMAD provider file, Center for Health Economics Research.

Table 4.8A1

Distribution of Medicare Allowed Charges for Providers who Gain or Lose, by State for the HCFA Multiplicative Model With GPCI

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Allowed Charges				
All States	12,560	30	17	16	14	23
Alabama	232	19	42	8	11	21
Alaska	22	0	0	30	61	9
Arizona	161	28	15	33	14	10
Arkansas	156	23	16	15	22	24
California	1,261	31	20	13	21	15
Colorado	139	16	9	19	12	44
Connecticut	152	32	11	17	18	21
Delaware	24	21	14	44	8	12
District of Columbia	137	37	9	6	14	33
Florida	739	19	22	31	21	7
Georgia	281	32	12	20	14	22
Hawaii	93	26	17	37	18	3
Idaho	35	2	26	24	23	25
Illinois	502	25	13	14	12	35
Indiana	224	21	17	12	10	41
Iowa	102	57	9	9	6	19
Kansas	78	28	6	23	21	22
Kentucky	172	38	15	13	14	20
Louisiana	360	43	14	9	10	24
Maine	67	62	6	9	8	14
Maryland	151	17	20	15	18	30
Massachusetts	264	32	13	15	17	24
Michigan	413	22	9	15	14	40
Minnesota	90	4	35	26	9	25
Mississippi	143	52	4	6	9	29
Missouri	201	25	12	11	12	40
Montana	62	43	25	9	16	6
Nebraska	73	18	13	28	25	17
Nevada	36	53	13	13	13	7
New Hampshire	38	13	4	27	4	53
New Jersey	359	16	25	15	16	29
New Mexico	57	23	26	13	23	15
New York	1,662	33	22	14	10	22
North Carolina	263	38	15	19	13	16
North Dakota	19	75	3	19	1	2
Ohio	662	30	28	7	10	24
Oklahoma	190	41	13	23	15	8
Oregon	153	42	11	13	24	11
Pennsylvania	564	24	8	19	14	36
Rhode Island	57	15	24	24	20	17
South Carolina	154	30	18	13	13	27
South Dakota	24	36	16	24	5	19
Tennessee	190	11	9	11	20	48
Texas	973	52	12	14	8	14
Utah	66	10	15	49	13	13
Vermont	23	1	26	13	25	35
Virginia	168	14	6	27	13	39
Washington	238	22	28	14	14	22
West Virginia	104	55	6	10	8	21
Wisconsin	208	13	18	12	20	37
Wyoming	18	11	30	4	4	51

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding; providers have been weighted by total allowed charges; provider sample size may affect precision of the estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider file.

Table 4.8A2

Distribution of Providers Who Gain or Lose by Change in Medicare Allowed Charges, by State for the HCFA Multiplicative Model with GPCI

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Providers				
All States	12,560	12	15	18	17	38
Alabama	232	16	22	13	16	33
Alaska	22	5	0	45	36	14
Arizona	161	12	17	29	23	19
Arkansas	156	16	19	13	17	35
California	1,261	14	18	19	24	25
Colorado	139	13	10	18	10	50
Connecticut	152	8	10	19	33	30
Delaware	24	8	24	24	8	36
District of Columbia	137	9	9	14	19	49
Florida	739	14	23	31	22	11
Georgia	281	15	16	20	16	34
Hawaii	93	14	12	35	24	15
Idaho	35	3	17	23	20	37
Illinois	502	6	11	13	12	58
Indiana	224	8	10	14	18	50
Iowa	102	9	16	18	8	50
Kansas	78	12	4	24	27	33
Kentucky	172	16	14	15	21	34
Louisiana	360	17	13	15	16	39
Maine	67	13	15	15	13	43
Maryland	151	7	19	13	19	43
Massachusetts	264	11	15	15	20	40
Michigan	413	7	7	14	17	55
Minnesota	90	4	17	17	16	47
Mississippi	143	8	6	9	18	58
Missouri	201	13	9	12	11	55
Montana	62	31	19	11	16	23
Nebraska	73	5	12	32	15	37
Nevada	36	11	22	19	22	25
New Hampshire	38	8	13	13	5	62
New Jersey	359	7	14	14	16	49
New Mexico	57	19	14	11	26	30
New York	1,662	16	17	18	13	35
North Carolina	263	14	14	18	17	36
North Dakota	19	21	16	21	16	26
Ohio	662	12	14	13	15	45
Oklahoma	190	16	13	26	19	26
Oregon	153	5	17	18	30	30
Pennsylvania	564	8	7	15	15	55
Rhode Island	57	5	18	14	26	37
South Carolina	154	15	16	12	12	45
South Dakota	24	4	13	33	12	38
Tennessee	190	10	12	13	16	49
Texas	973	18	13	17	16	36
Utah	66	6	14	18	12	50
Vermont	23	4	21	12	17	46
Virginia	168	10	8	19	16	47
Washington	238	14	21	17	16	42
West Virginia	104	20	7	17	17	39
Wisconsin	208	5	10	13	20	51
Wyoming	18	11	17	17	11	44

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding; provider sample size may affect precision of estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider files.

Table 4.881
Distribution of Medicare Allowed Charges for Providers who Gain or Lose, by State for the HCFA Additive With No GPCI

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Allowed Charges				
All Stetes	12,560	16	28	24	16	16
Alabama	232	1	13	29	37	20
Alaska	22	30	68	1	0	0
Arizona	161	15	28	34	17	5
Arkansas	156	0	20	24	25	30
California	1,261	30	37	26	4	2
Colorado	139	1	14	21	25	39
Connecticut	152	8	34	30	21	8
Deleware	24	21	7	15	23	33
District of Columbia	137	36	18	31	13	3
Florida	739	8	37	36	14	5
Georgia	281	6	30	18	20	26
Hawaii	93	6	50	38	5	1
Idaho	35	0	0	16	48	35
Illinois	502	4	33	20	18	24
Indiana	224	1	22	23	18	36
Iowa	102	2	56	5	8	28
Kansas	78	1	6	40	27	25
Kentucky	172	20	15	25	17	23
Louisiana	360	21	24	16	14	25
Maine	67	0	23	42	18	17
Maryland	151	4	27	32	21	15
Massachusetts	264	8	35	24	25	9
Michigan	413	16	18	25	20	21
Minnesota	90	6	9	29	38	19
Mississippi	143	1	44	11	7	37
Missouri	201	3	21	21	20	35
Montana	62	15	26	26	27	7
Nebraska	73	0	21	9	46	24
Nevada	36	49	30	15	5	1
New Hampshire	38	0	5	34	13	47
New Jersey	359	14	30	30	13	13
New Mexico	57	1	41	22	24	11
New York	1,662	45	24	15	10	7
North Carolina	263	7	22	28	22	22
North Dakota	19	0	70	24	1	5
Ohio	662	5	27	34	14	20
Oklahoma	190	14	26	25	26	9
Oregon	153	24	21	27	22	6
Pennsylvania	564	7	22	28	22	22
Rhode Island	57	0	15	57	19	9
South Carolina	154	1	18	33	18	30
South Dakota	24	0	36	15	23	25
Tennessee	190	3	6	12	18	61
Texas	973	20	36	17	13	14
Utah	66	0	15	13	59	13
Vermont	23	0	1	24	40	35
Virginia	168	1	7	29	21	43
Washington	238	5	38	36	17	4
West Virginia	104	1	52	13	9	24
Wisconsin	208	0	15	26	28	31
Wyoming	18	0	2	15	36	47

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding. Proviers have been weighted by total allowed charges; provider sample size may affect precision of estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider file.

Table 4.882

Distribution of Providers who Gain or Lose by Change in Medicare Allowed Charges, by State for the HCFA Additive Model with no GPCI

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Providers				
All States	12,560	11	18	23	19	29
Alabama	232	9	12	25	21	33
Alaska	22	36	50	9	0	5
Arizona	161	7	25	39	16	12
Arkansas	156	3	12	24	19	42
California	1,261	20	35	29	10	6
Colorado	139	6	13	13	22	47
Connecticut	152	6	18	37	29	9
Deleware	24	8	21	25	21	25
District of Columbia	137	8	23	34	24	12
Florida	739	12	31	32	16	9
Georgia	281	5	16	22	19	39
Hswaii	93	12	30	35	17	5
Idaho	35	0	3	20	40	37
Illinois	502	6	17	18	22	37
Indiana	224	4	9	18	22	47
Iowa	102	5	11	12	14	59
Kansas	78	3	8	15	38	36
Kentucky	172	5	11	22	21	41
Louisisna	360	10	14	19	18	39
Maine	67	3	6	16	24	51
Marylsnd	151	7	18	27	22	26
Massschusetts	264	9	16	25	26	25
Michigsn	413	6	13	23	23	35
Minnesota	90	7	8	22	27	37
Mississippi	143	3	6	4	15	72
Missouri	201	5	11	15	19	49
Montana	62	11	19	23	24	23
Nebraska	73	0	8	16	32	44
Nevada	36	17	36	28	14	6
New Hampshire	38	3	8	21	11	58
New Jersey	359	8	17	26	17	32
New Mexico	57	2	25	18	33	23
New York	1,662	28	25	20	15	13
North Csrolina	263	3	12	18	20	46
North Dakota	19	0	16	32	16	37
Ohio	662	7	12	21	20	40
Oklahoma	190	8	12	27	25	28
Oregon	153	1	13	33	31	22
Pennsylvania	564	6	10	21	21	42
Rhode Island	57	2	18	28	30	23
South Carolins	154	1	10	22	13	53
South Dakota	24	0	4	17	21	58
Tennessee	190	4	8	10	17	61
Texas	973	9	16	21	19	35
Utsh	66	2	12	20	17	50
Vermont	23	0	9	9	30	52
Virignia	168	4	8	19	21	49
Washington	238	4	18	34	30	13
West Virginia	104	10	11	12	21	46
Wisconsin	208	3	7	17	27	45
Wyoming	18	0	11	22	33	33

NOTES: New payment rates are set budget neutral to current psyment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding; provider sample size may affect precision of estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider files.

Table 4.8C1
Distribution of Medicare Allowed Charges for Providers who Gain or Lose, by State for the HCFA Additive Model With GPCI on Overhead Costs

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Allowed Charges				
All States	12,560	14	29	25	17	16
Alabama	232	1	25	25	31	17
Alaska	22	2	88	9	0	0
Arizona	161	15	27	35	19	5
Arkansas	156	10	16	25	29	19
California	1,261	19	36	32	10	3
Colorado	139	1	14	23	29	32
Connecticut	152	5	31	31	24	9
Delaware	24	21	7	18	20	33
District of Columbia	137	31	19	21	24	4
Florida	739	7	38	37	15	3
Georgia	281	6	31	24	19	21
Hawaii	93	1	44	48	5	1
Idaho	35	0	0	31	45	23
Illinois	502	6	26	23	14	31
Indiana	224	6	24	24	18	28
Iowa	102	2	56	11	13	18
Kansas	78	2	5	44	27	21
Kentucky	172	22	23	21	15	19
Louisiana	360	27	20	19	15	19
Maine	67	3	20	45	16	16
Maryland	151	4	27	34	18	16
Massachusetts	264	5	33	26	23	13
Michigan	413	7	22	22	25	24
Minnesota	90	6	9	29	42	14
Mississippi	143	1	51	5	8	35
Missouri	201	3	21	21	22	33
Montana	62	24	20	29	22	5
Nebraska	73	9	15	44	14	18
Nevada	36	16	63	15	4	2
New Hampshire	38	0	6	33	14	47
New Jersey	359	11	21	38	14	17
New Mexico	57	1	47	18	22	11
New York	1,662	29	31	18	13	9
North Carolina	263	13	35	22	13	17
North Dakota	19	50	21	24	4	2
Ohio	662	6	42	21	13	18
Oklahoma	190	14	28	28	21	8
Oregon	153	24	21	26	23	6
Pennsylvania	564	6	22	29	20	23
Rhode Island	57	0	16	58	17	8
South Carolina	154	10	23	25	17	25
South Dakota	24	0	36	28	11	25
Tennessee	190	3	9	14	23	51
Texas	973	37	23	19	9	12
Utah	66	0	18	11	58	13
Vermont	23	0	9	25	31	35
Virginia	168	3	11	24	23	39
Washington	238	4	39	34	18	4
West Virginia	104	2	52	15	12	19
Wisconsin	208	0	18	33	26	23
Wyoming	18	2	12	31	8	47

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges; provider sample size may affect precision of the estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider file.

Table 4.8C2

Distribution of Providers Who Gain or Lose by Change in Medicare Allowed Charges, by State for the HCFA Additive Model with GPCI on Overhead Costs

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Providers				
All States	12,560	9	19	24	20	29
Alabama	232	10	18	27	16	29
Alaska	22	14	68	9	5	5
Arizona	161	7	23	40	18	12
Arkansas	156	7	16	24	22	31
California	1,261	13	29	32	15	10
Colorado	139	7	13	15	22	42
Connecticut	152	4	14	36	35	11
Delaware	24	8	25	25	17	25
District of Columbia	137	5	22	29	28	16
Florida	739	11	32	34	16	8
Georgia	281	6	16	25	19	34
Hawaii	93	9	26	42	16	8
Idaho	35	0	3	29	37	31
Illinois	502	5	14	17	19	46
Indiana	224	6	11	22	25	37
Iowa	102	5	12	19	15	50
Kansas	78	4	6	19	40	31
Kentucky	172	8	12	24	22	34
Louisiana	360	11	14	22	18	34
Maine	67	4	7	19	21	48
Maryland	151	7	18	28	19	28
Massachusetts	264	8	13	24	25	30
Michigan	413	4	13	20	22	40
Minnesota	90	8	9	21	30	32
Mississippi	143	4	6	8	15	67
Missouri	201	5	12	15	20	48
Montana	62	15	19	27	23	16
Nebraska	73	2	8	38	12	40
Nevada	36	8	42	31	11	8
New Hampshire	38	3	11	18	13	55
New Jersey	359	6	13	27	16	37
New Mexico	57	4	28	18	30	21
New York	1,662	17	25	21	17	19
North Carolina	263	6	18	20	21	35
North Dakota	19	5	16	37	26	16
Ohio	662	8	15	21	19	38
Oklahoma	190	11	13	31	21	25
Oregon	153	1	14	31	31	22
Pennsylvania	564	6	10	22	20	43
Rhode Island	57	2	21	30	26	21
South Carolina	154	4	18	18	16	44
South Dakota	24	0	4	29	13	54
Tennessee	190	5	11	13	19	52
Texas	973	12	19	21	17	31
Utah	66	3	14	20	14	50
Vermont	23	0	13	17	17	52
Virginia	168	6	8	21	24	41
Washington	238	4	18	33	31	15
West Virginia	104	12	11	13	26	38
Wisconsin	208	3	10	22	27	39
Wyoming	18	6	22	17	28	28

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding; provider sample size may affect precision of estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider files.

Table 4.8D1
Distribution of Medicare Allowed Charges for Providers who Gain or Lose, by State for the HCFA Additive Model With GPCI on Both Components

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Allowed Charges				
All States	12,560	14	28	26	17	15
Alabama	232	2	37	38	11	12
Alaska	22	0	2	88	9	1
Arizona	161	15	27	36	18	5
Arkansas	156	18	27	30	20	5
California	1,261	14	31	33	17	6
Colorado	139	1	14	23	29	32
Connecticut	152	5	31	28	25	11
Delaware	24	19	5	19	23	33
District of Columbia	137	14	31	11	32	12
Florida	739	9	42	35	11	2
Georgia	281	15	32	23	22	8
Hawaii	93	1	44	48	5	1
Idaho	35	0	3	43	39	15
Illinois	502	5	23	22	16	34
Indiana	224	6	27	22	20	25
Iowa	102	5	55	12	10	18
Kansas	78	4	35	36	17	8
Kentucky	172	23	28	21	17	11
Louisiana	360	29	18	20	18	15
Maine	67	3	61	18	12	7
Maryland	151	4	25	24	25	21
Massachusetts	264	5	33	26	21	14
Michigan	413	3	23	17	22	35
Minnesota	90	6	9	29	36	19
Mississippi	143	31	22	10	15	23
Missouri	201	7	25	20	24	25
Montana	62	29	28	36	5	2
Nebraska	73	17	10	47	12	14
Nevada	36	15	63	15	1	6
New Hampshire	38	0	25	23	31	22
New Jersey	359	10	10	44	15	21
New Mexico	67	1	59	13	16	10
New York	1,662	21	29	22	14	14
North Carolina	263	19	37	22	11	12
North Dakota	19	50	30	15	4	2
Ohio	662	10	30	30	14	17
Oklahoma	190	27	25	37	7	5
Oregon	153	24	26	27	19	4
Pennsylvania	564	6	24	26	20	24
Rhode Island	57	0	16	56	19	9
South Carolina	154	13	31	25	16	15
South Dakota	24	36	15	23	11	14
Tennessee	190	5	14	16	29	37
Texas	973	42	22	19	8	9
Utah	66	2	16	11	61	10
Vermont	23	1	24	40	22	13
Virginia	168	3	13	30	25	29
Washington	238	4	34	36	20	6
West Virginia	104	2	57	15	9	17
Wisconsin	208	1	19	32	29	19
Wyoming	18	2	12	34	7	45

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding. Providers have been weighted by total allowed charges; provider sample size may affect precision of the estimates in smaller states; boundaries used for Medicare payment purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider file.

Table 4.8D2

Distribution of Providers Who Gain or Lose by change in Medicare Allowed Charges, by State for HCFA Additive Model with GPCI on Both Components

State	Sample Size	Percent Loss or Gain in Allowed Charges				
		<-30%	-30% to -10%	-10% to 10%	10% to 30%	>30%
		Percent of Providers				
All States	12,560	9	18	25	20	28
Alabama	232	14	23	25	18	20
Alaska	22	5	9	68	9	9
Arizona	161	8	23	40	19	11
Arkansas	156	13	28	20	22	17
California	1,261	9	22	34	20	15
Colorado	139	8	12	16	22	42
Connecticut	152	3	14	28	38	17
Delaware	24	4	13	33	25	25
District of Columbia	137	3	14	20	28	34
Florida	739	12	34	36	11	6
Georgia	281	10	23	22	25	20
Hawaii	93	9	25	43	15	9
Idaho	35	0	6	40	37	17
Illinois	502	3	11	18	16	52
Indiana	224	6	13	21	29	32
Iowa	102	7	13	19	12	50
Kansas	78	6	14	42	21	17
Kentucky	172	9	17	26	24	24
Louisiana	360	13	16	22	20	29
Maine	67	6	16	25	36	16
Maryland	151	6	16	22	23	33
Massachusetts	264	8	13	25	24	30
Michigan	413	2	11	15	22	50
Minnesota	90	7	9	22	27	36
Mississippi	143	6	6	16	20	53
Missouri	201	8	14	15	22	41
Montana	62	19	29	27	16	8
Nebraska	73	5	15	37	10	33
Nevada	36	3	42	33	8	14
New Hampshire	38	3	21	16	24	37
New Jersey	359	5	9	26	17	44
New Mexico	67	5	30	25	21	19
New York	1,662	12	20	23	17	28
North Carolina	263	9	21	23	18	28
North Dakota	19	5	32	26	21	16
Ohio	662	8	16	20	20	35
Oklahoma	190	13	22	33	18	15
Oregon	153	2	18	36	25	19
Pennsylvania	564	5	11	20	20	44
Rhode Island	57	2	19	26	30	23
South Carolina	154	7	23	16	19	35
South Dakota	24	4	17	25	29	25
Tennessee	190	7	13	18	24	38
Texas	973	14	20	22	19	24
Utah	66	5	14	20	20	42
Vermont	23	9	9	30	22	30
Virginia	168	6	15	19	26	34
Washington	238	3	16	30	33	19
West Virginia	104	13	13	23	20	32
Wisconsin	208	3	12	22	33	30
Wyoming	18	6	22	22	28	22

NOTES: New payment rates are set budget neutral to current payment levels, assuming no behavioral offsets; rows may not sum to 100 percent due to rounding; provider sample size may affect precision of estimates in smaller states; boundaries used for Medicare purposes do not correspond precisely to state boundaries.

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations, 1988 estimates based on 1987 BMAD provider file.

Table 4.9A1

Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability
Under Various RBRVS-Based Implementation Models

HCFA Additive Model - No GPCI
Current Balance Billing Practices

Coinsurance Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	22	54	13	8	3	*
RVS	18	56	15	8	3	*

Balance Bill Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	24	55	11	5	3	2
RVS	41	38	10	4	3	3

Total Liability - Deductible, Coinsurance and Balance Billing

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	—	34	39	14	8	5
RVS	—	34	39	14	7	6

*Less than 1 percent "—" is not applicable.

Notes: This simulation assumes no change in physician assignment Rows may not sum to 100 percent due to rounding. CPR is customary, prevailing and reasonable charge payment. RVS is relative value scale payment.

Source: Health Care Financing Administration, Office of Research and Demonstrations. 1988 Estimates based on 1987 BMAD beneficiary file.

Table 4.9A2

Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability
Under Various RBRVS-Based Implementation Models

HCFA Additive Model - No GPCI
120 Percent Balance Billing Cap

Coinsurance Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	22	54	13	8	3	*
RVS	18	56	15	8	3	*

Balance Bill Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	24	55	11	5	3	2
RVS	41	51	5	2	*	*

Total Liability - Deductible, Coinsurance and Balance Billing

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	—	34	39	14	8	5
RVS	—	38	42	12	7	2

*Less than 1 percent "—" is not applicable.

Notes: This simulation assumes no change in physician assignment. Rows may not sum to 100 percent due to rounding. CPR is customary prevailing and reasonable charge payment. RVS is relative value scale payment.

Source: Health Care Financing Administration, Office of Research and Demonstrations. 1988 Estimates based on 1987 BMAD beneficiary file.

Table 4.9B1

Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability
Under Various RBRVS-Based Implementation Models

HCFA Additive Model - GPCI on Overhead Costs
Current Balance Billing Practices

Coinsurance Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	22	54	13	8	3	*
RVS	18	56	15	8	3	*

Balance Bill Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	24	55	11	5	3	2
RVS	41	39	10	4	3	4

Total Liability - Deductible, Coinsurance and Balance Billing

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	—	34	39	14	8	5
RVS	—	34	39	14	7	6

*Less than 1 percent "—" is not applicable.

Notes: This simulation assumes no change in physician assignment. Rows may not sum to 100 percent due to rounding. CPR is customary, prevailing, and reasonable charge payment. RVS is relative value scale payment.

Source: Health Care Financing Administration, Office of Research and Demonstrations. 1988 Estimates based on 1987 BMAD beneficiary file.

Table 4.9B2

Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability
Under Various RBRVS-Based Implementation Models

HCFA Additive Model - GPCI on Overhead Costs
120 Percent Balance Billing Cap

Coinsurance Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	22	54	13	8	3	*
RVS	18	56	15	8	3	*

Balance Bill Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	24	55	11	5	3	2
RVS	41	52	5	2	*	*

Total Liability - Deductible, Coinsurance and Balance Billing

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	—	34	39	14	8	5
RVS	—	38	42	12	6	1

*Less than 1 percent "—" is not applicable.

Notes: This simulation assumes no change in physician assignment. Rows may not sum to 100 percent due to rounding. CPR is customary, prevailing, and reasonable charge payment. RVS is relative value scale payment.

Source: Health Care Financing Administration, Office of Research and Demonstrations. 1988 Estimates based on 1987 BMAD beneficiary file.

Table 4.9C1

Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability
Under Various RBRVS-Based Implementation Models

HCFA Additive Model - GPCI on Both Components
Current Balance Billing Practices

Coinsurance Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	22	54	13	8	3	*
RVS	18	56	15	8	3	*

Balance Bill Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	24	55	11	5	3	2
RVS	41	40	10	4	3	4

Total Liability - Deductible, Coinsurance and Balance Billing

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	—	34	39	14	8	5
RVS	—	34	39	15	7	6

*Less than 1 percent "—" is not applicable.

Notes: This simulation assumes no change in physician assignment. Rows may not sum to 100 percent due to rounding. CPR is customary, prevailing and reasonable charge payment. RVS is relative value scale payment.

Source: Health Care Financing Administration, Office of Research and Demonstrations. 1988 Estimates based on 1987 BMAD beneficiary file.

Table 4.9C2

Percent of Beneficiaries with Various Levels of Out-of-Pocket Liability Under Various RBRVS-Based Implementation Models:

HCFA Additive Model - GPCI on Both Components
120 Percent Balance Billing Caps

Coinsurance Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	22	54	13	8	3	*
RVS	18	56	15	8	3	*

Balance Bill Liability

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	24	55	11	5	3	2
RVS	41	52	5	2	*	*

Total Liability - Deductible, Coinsurance and Balance Billing

	$0	$1-100	$101-250	$251-500	$501-1,000	>$1,000
CPR	—	34	39	14	8	5
RVS	—	39	42	12	6	1

*Less than 1 percent "—" is not applicable.

Notes: This simulation assumes no change in physician assignment. Rows may not sum to 100 percent due to rounding. CPR is customary, prevailing, and reasonable charge payment. RVS is relative value scale payment.

Source: Health Care Financing Administration, Office of Research and Demonstrations. 1988 Estimates based on 1987 BMAD beneficiary file.

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-80TH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-80TH
TOTAL		11986556198	241884019	-0	-0	-0	50	50	50	50
66984	REMOVE CATARACT	1369017716	837691	-32	-33	-33	1635	1110	1098	1093
90060	OFFICE VISIT,IN	818134833	33026473	47	48	49	25	36	37	37
90050	OFFICE VISIT, L	675058311	33830463	49	48	47	20	30	30	29
90260	HOSPITAL VISIT,	591957783	20650006	47	48	49	29	42	42	43
90250	HOSPITAL VISIT,	406976151	16311940	39	38	37	25	35	34	34
90220	HOSPITAL CARE,	316448120	4209900	41	41	40	75	106	106	105
71020	X-RAY EXAM OF C	265938307	12666836	-23	-23	-24	21	16	16	16
52601	PROSTATECTOMY (	265692439	232796	-32	-32	-32	1141	777	774	771
90620	COMPREHENSIVE C	252350768	2836893	27	29	30	89	113	114	116
93000	ECG, WITH REPOR	220581463	6486925	-61	-61	-60	34	13	13	13
90070	OFFICE VISIT EX	218166093	6748332	59	62	64	32	51	52	53
90040	OFFICE VISIT, E	170004564	10144804	41	38	35	17	24	23	23
90270	HOSPITAL VISIT,	167962748	4475569	55	56	57	38	58	58	59
90080	OFFICE VISIT,CO	152733628	3223988	38	40	41	47	65	66	67
27130	TOTAL HIP JOINT	140878327	55606	-39	-39	-39	2534	1545	1542	1539
92014	EYE EXAM & TREA	130969497	3246539	11	13	14	40	45	46	46
90020	OFFICE VISIT, N	123035655	2271892	27	29	30	54	69	70	71
33512	CABG, 3 GRAFTS	116396201	28348	-49	-49	-48	4106	2109	2112	2120
90240	HOSPITAL VISIT,	110610454	5528566	34	31	28	20	27	26	26
66983	REMOVE CATARACT	105630230	62899	-35	-34	-33	1679	1095	1111	1122
33513	CABG, 4 GRAFTS	104406954	24052	-47	-48	-47	4341	2288	2278	2280
27244	REPAIR OF FEMUR	102389720	83064	-10	-10	-11	1233	1113	1104	1097
92012	EYE EXAM & TREA	99976489	3295839	22	23	23	30	37	37	37
70470	CONTRAST CAT SC	85160230	654193	-36	-37	-38	130	83	82	81
67228	TREATMENT OF RE	80245087	103950	-37	-36	-35	772	484	492	498
70450	CAT SCAN OF HEA	78709603	798757	-33	-32	-32	99	66	67	67
90215	HOSPITAL CARE,N	78292289	1320940	0	-1	-2	59	60	59	58
90630	COMPLEX CONSULT	76182716	645090	17	19	21	118	139	140	142
76091	X-RAY EXAM OF B	75861212	1479085	7	8	8	51	55	55	55
76516	ECHO EXAM OF EY	71441430	499331	-66	-66	-66	143	49	49	49
44140	PARTIAL REMOVAL	71371981	57775	-24	-24	-24	1235	937	940	936
90280	HOSPITAL VISIT,	70493635	1678461	73	74	77	42	73	73	74
93010	ECG REPORT ONLY	70158675	5602055	-55	-56	-57	13	6	6	5
88305	SURGICAL PATHOL	69283199	1212279	-11	-11	-12	57	51	51	50
27236	REPAIR OF FEMUR	68244464	53562	-12	-13	-14	1274	1116	1104	1094
65855	LASER SURGERY O	67854336	80054	-42	-41	-40	848	494	501	505
35301	RECHANNELING OF	67407991	41497	-41	-41	-42	1624	958	950	944
88304	SURGICAL PATHOL	67269428	1935813	-65	-65	-65	35	12	12	12
52000	CYSTOSCOPY	62188336	573343	16	16	16	108	126	126	126
90015	OFFICE VISIT, N	61264948	1763819	15	14	14	35	40	40	40
74160	CONTRAST CAT SC	60922111	465793	-37	-37	-37	131	83	82	82
47605	REMOVAL OF GALL	59876136	64736	-34	-35	-36	925	608	600	590
45378	DIAGNOSTIC COLO	59510238	146718	-55	-55	-55	406	183	182	181
45330	SIGMOIDOSCOPY	57938201	464166	-11	-11	-12	125	112	111	110
92004	NEW EYE EXAM &	53162334	1254571	64	64	65	42	69	70	70
99160	CRITICAL CARE,	52568583	590965	17	15	13	89	104	103	100
49505	REPAIR INGUINAL	51322720	93712	-50	-50	-50	548	272	273	271
33511	CABG, 2 GRAFTS	50137746	13550	-47	-47	-47	3700	1955	1957	1962
90610	EXTENDED CONSUL	47359909	724696	40	39	38	65	91	91	90

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
45385	COLONOSCOPY, LE	46493483	74399	-58	-58	-59	625	261	260	258
19240	EXTENSIVE BREAS	44932160	43979	-23	-22	-23	1022	791	792	788
78306	NUCLEAR SCAN OF	44350804	572012	-55	-55	-55	78	35	35	35
33514	CABG, 5 GRAFTS	43276788	9670	-47	-47	-47	4475	2373	2361	2360
90600	LIMITED CONSULT	41329365	756784	-28	-25	-24	55	39	41	42
92235	OPHTHALMOSCOPY/	40371694	313126	-5	-3	-2	129	122	124	126
90360	CARE FACILITY V	39601534	1500584	38	39	42	26	36	37	37
93262	ECG MONITORING,	39301973	205571	-62	-62	-61	191	72	72	74
74170	CONTRAST CAT SC	38061884	252863	-36	-37	-37	151	96	95	94
66985	INSERT LENS PRO	38058665	36413	-26	-25	-25	1045	778	779	780
77410	DAILY RADIATION	36005981	394975	-12	-11	-10	91	81	82	82
90010	OFFICE VISIT, N	33993660	1182523	12	11	9	29	32	32	31
20610	INJECT/DRAIN JO	33702411	1127231	69	69	69	30	51	51	51
79510	X-RAY EXAM OF H	33644074	1280206	-17	-17	-17	26	22	22	22
47600	REMOVAL OF GALL	33599531	42370	-28	-28	-29	793	569	568	566
72110	X-RAY EXAM OF L	33105976	793596	-33	-33	-32	42	28	28	28
90605	INTERMEDIATE CO	32812914	648687	27	25	24	51	64	63	63
76519	ECHO EXAM OF EY	32280401	224378	-64	-64	-64	144	52	52	51
35081	REPAIR DEFECT O	31919719	13943	-26	-27	-27	2289	1684	1674	1665
88307	SURGICAL PATHOL	31519148	396842	-22	-22	-22	79	62	62	62
90350	CARE FACILITY V	30348395	1289308	25	26	26	24	29	30	30
67210	TREATMENT OF RE	30048632	39770	-36	-36	-35	756	482	487	489
33207	INSERTION OF HE	29816363	27094	-62	-63	-63	1100	415	412	409
11642	REMOVAL OF SKIN	28327881	144775	-25	-26	-27	196	146	144	143
58150	TOTAL HYSTERECT	27870937	28127	-45	-46	-46	991	541	535	532
47610	REMOVAL OF GALL	27480930	25999	-32	-32	-33	1057	724	720	712
72131	CAT SCAN OF LOW	26239661	189198	-39	-39	-39	139	85	85	85
70460	CONTRAST CAT SC	26239110	223426	-37	-37	-37	117	74	74	74
90017	OFFICE VISIT, N	24240668	635882	45	44	42	38	55	55	54
74150	CAT SCAN OF ABD	23996133	208541	-35	-35	-35	115	75	75	75
29881	KNEE ARTHROSCOP	23976979	22856	-54	-54	-55	1049	482	479	477
90642	INTERMEDIAT FOL	23913215	651945	14	16	19	37	42	42	44
88309	SURGICAL PATHOL	23836946	220741	18	18	18	108	128	128	127
27125	REVISE HIP WITH	23833589	15747	-32	-32	-33	1514	1030	1022	1017
19120	REMOVAL OF BREA	23735908	84413	-13	-13	-13	281	244	244	243
11100	BIOPSY OF LESIO	23372339	554847	12	12	13	42	47	47	48
67107	REPAIR DETACHED	23306127	13963	-23	-23	-22	1669	1285	1293	1299
77405	DAILY RADIATION	23221128	312169	-17	-17	-17	74	62	62	61
45380	COLONOSCOPY AND	23180209	51838	-55	-56	-56	447	200	198	196
71010	X-RAY EXAM OF C	23162004	919481	-58	-58	-58	25	11	11	11
71260	CONTRAST CAT SC	23129047	172993	-37	-37	-37	134	84	84	84
33405	REPLACEMENT OF	23077134	8031	-27	-27	-26	2874	2092	2106	2117
92083	VISUAL FIELD EX	22132597	378601	-3	-2	-2	58	57	57	57
11641	REMOVAL OF SKIN	21944929	141298	-25	-26	-27	155	117	115	114
32480	PARTIAL REMOVAL	20827844	12224	-12	-11	-11	1704	1506	1512	1515
44120	REMOVAL OF SMAL	20661752	20873	-15	-14	-15	990	846	848	846
73560	X-RAY EXAM OF K	20019312	842326	-24	-25	-26	24	18	18	18
76700	ECHO EXAM OF AB	19709346	138112	-41	-38	-36	143	84	88	92
72100	X-RAY EXAM OF L	19582411	620634	-32	-32	-33	32	22	21	21
88331	CONSULTATION DU	18786188	304074	16	16	14	62	72	71	71

Source: HCFA, Office of Research and Demonstrations. National 1988 estimates based on 1987 BMAD procedure file.

References

American Society of Anesthesiologists: Relative Value Guide, American Society of Anesthesiologists, 1988.

American College of Radiology: The Radiology Relative Value Scales and Fee Schedules being Developed by the Health Care Financing Administration under Section 4049 of the Omnibus Budget Reconciliation Act of 1987, American College of Radiology, August 3, 1988.

American Medical Association: CPT Physicians' Current Procedural Terminology, American Medical Association, 1989.

American Medical Association Center for Health Policy Research: The Impact of Medicare Payment Schedule Alternatives on Physicians, Chicago, American Medical Association, 1988.

Becker, E.R., Dunn, D., Hsiao, W. C.: Relative Cost Differences Among Physicians' Specialty Practices: The Journal of the American Medical Association, - Vol. 260, No. 16. October 28, 1988.

Braun, P., Hsiao, W.C., Becker, E.R., DeNicola, M.: Evaluation and Management Services in the Resource-Based Relative Value Scale: The Journal of the American Medical Association, - Vol. 260, No. 16, October 28, 1988.

Braun, P., Yntema, D.B., Dunn, D., DeNicola, M., Ketcham, T., Verrilli, D., Hsiao, W.C.: Cross-Specialty Linkage of Resource-Based Relative Value Scales: Linking Specialities by Services and Procedures of Equal Work, The Journal of the American Medical Association, - Vol. 260, No. 16, Oct. 28, 1988.

Dunn, D., Hsiao, W.C., Ketcham, T.R., Braun, P.: A Method for Estimating the Preservice and Postservice Work of Physicians' Services, The Journal of the American Medical Association - Vol. 260, No. 16, Oct. 28, 1988.

HHS: Report to Congress: National Fee Schedule Implementation. Department of Health and Human Services, Washington, D.C., 1985.

HHS: Report to Congress: Growth in Volume and Intensity of Physician Services: Issues and Options. Department of Health and Human Services, Washington, D.C., 1989.

Hadley, J., Regulating Doctors' Fees: Costs, Competition, an Controls under Medicare, April 17-18, 1989, Conference Paper, Theoretical and Empirical Foundations of the Resource Based Value Scale: Fact and Fancy.

Hadley, J., Juba, D., Berenson, R., et al.: Final Report on Alternative Methods of Developing a Relative Value Scale of Physicians' Services. Washington, D.C. The Urban Institute, October 1984.

Hsiao, W.C., Braun, P., Becker, E. et al.: A National Study of Resource-Based Relative Value Scales for Physician Services. Final report: Cooperative Agreement No. 17-C-98795/1-03 Presented to Health Care Financing Administration. September 27, 1988.

Hsiao, W.C., Braun, P., Becker, E. et al.: A National Study of Resource-Based Relative Value Scales for Physician Services. Final report--Final Values and Components (Data Tape): Cooperative Agreement No. 17-C-98795/1-03 Presented to Health Care Financing Administration. January, 1989.

Hsiao, W.C., Braun, P., Dunn, D., Becker, E. R., Resource-Based Relative Values: The Journal of the American Medical Association, - Vol. 260, No. 16, October 28, 1988.

Hsiao, W.C., Braun, P., Dunn, D., Becker, E., et al.: Results and Policy Implications of the Resource-Based Relative Value Study. The New England Journal of Medicine, -Vol. 319, No. 13 September 29, 1988.

Hsiao, W.C., Braun, P., Dunn, C., Spencer, C., Measurement and Analysis of Intraservice Work: The Journal of the American Medical Association, - Vol. 260, No. 16, Oct. 28, 1988.

Hsiao, W.C., Braun, P., Goldman, P., et al: Resource-Based Relative Values of Selected Medical and Surgical Procedures in Massachusetts: Final Report on Research Contract for Rate Setting Commission, Commonwealth of Massachusetts. Boston. Harvard School of Public Health, 1985.

Hsiao, W.C., Braun, P., Kelly, N.L., Becker, E.R.: Results, Potential Effects, and Implementation Issues of the Resource-Based Relative Value Scale: The Journal of the American Medical Association, - Vol. 260, No. 16, Oct. 28, 1988.

Hsiao, W.C., Braun, P., Yntema, Becker, E.R.: Estimating Physicians' Work for a Resource-Based Relative Value Scale. The New England Journal of Medicine, - Vol. 319, No. 13, September 29, 1988

Hsiao, W.C., Couch, N.P., Causino, N., Becker, E.R., Ketcham, T.R., Verrilli, D.K.: Resource-Based Relative Values for Invasive Procedures Performed by Eight Surgical Specialties: The Journal of the American Medical Association, - Vol. 260, No. 16, Oct. 28, 1988.

Hsiao, W.C., and Stason, W.: Toward Developing a Relative Value Scale for Medical and Surgical Services. Health Care Financing Review 1:23-28, 1979.

Kelly, N.L., Hsiao, W.C., Braun, P., Sobol, A., DeNicola, M.: Extrapolation of Measures of Work for Surveyed Services to Other Services: The Journal of the American Medical Association, - Vol. 260, No. 16, Oct. 28, 1988.

Mitchell, J., Cromwell, J., Rosenbach, M., Stason, W.: Regulating Doctors' Fees: Costs, Competition, an Controls under Medicare, April 17-18, 1989, Conference Paper, Towards and Adjusted-Charge Relative Value Scale.

Mitchell, J., Cromwell, J., Rosenbach, M., et al.: Using relative physician effort to identify mispriced procedures. Final report. HHS Contract No. 100-86-0023. Prepared for Assistant Secretary for Planning and Evaluation. Washington, D.C., Health Economics Research, Inc., September, 1988.

Mitchell, J.B. Comments on RBRVS, unpublished memorandum to HCFA, 1989.

Mitchell J.B., Rosenbach, M.L., Cromwell, J.: To Sign or Not to Sign: Physician Participation in Medicare, 1984. Health Care Financing Review. 10:1 p. 17-26, 1988.

NORC, Physician Practice Costs Study, University of Chicago, 1983.

Office of the Inspector General: Problems with coding of physicians' services: Medicare Part B. Office of Inspector General, Department of Health and Human Services, Washington, D.C., January, 1989.

Pauly, M.: Technical Report: Impact of the Resource-Based Relative Value Scale on the Volume and Intensity of Physician Services. Contract No. 99-C-99169/5-01 Prepared for Health Care Financing Administration. Leonard Davis Institute of Health Economics. University of Pennsylvania, Dec. 21, 1988.

Paxton, H. T.: How Much Cheer do Third Parties Bring You: Medical Economics,- December 21, 1987.

Physician Payment Review Commission: Annual Report to Congress, 1989.

Roper, W. L.: Perspectives on Physician-Payment Reform: The New England Journal of Medicine,- Vol. 319, No. 13, Oct. 29, 1988.

Roper, W.L.: The Resource-Based Relative Value Scale: A Methodological and Policy Evaluation: The Journal of the American Medical Association, - Vol. 260, No. 16, Oct. 28, 1988.

Stevens, S.S. ed.: Psychophysics: Introduction to its Perceptual, Neural, and Social Prospects. New York. John Wiley & Sons Inc., 1975.

U.S. Senate, Committee on Governmental Affairs, : The California Relative Value Studies on Overview and the California Physicians Services, the Corporation and its Relationship with the California Medical Association, Washington, D.C. Committee on Governmental Affairs, April 1979.

Welch, W.P., Zuckerman, S., and Pope G., The Geographic Medicare Economic Index: Alternative Approaches, May 1989 (draft).

Zuckerman, S., Welch, F.P., Pope, G.C.: The Development of an Interim Geographic Medicare Economic Index. Final Report No. 17-C-9875/1-03 to the Health Care Financing Administration. December 1987.

APPENDIX A

How Medicare Determines Physician Payments

Medicare currently pays for physician services on a fee-for-service basis known as the customary, prevailing, and reasonable charge system. Medicare annually pays about 400 million claims for physicians' services to about 500,000 different physicians for over 7,000 different service codes. Under this system, payment is based on the charge that Medicare deems reasonable for the service. Medicare's reasonable or allowed charge for a service provided is the lowest of the actual charge submitted by the physician, the physician's customary charge (the physician's median charge for the service), or the prevailing charge in the locality (75th percentile of charges for all physicians in the area providing the service).

Since Medicare began, a large number of limits and other adjustments have been implemented that modify this basic approach for determining payments. For example, as a result of rapidly rising fees, Congress, in 1972, limited increases in Medicare prevailing charges to a Medicare Economic Index, which reflects increases in physicians' office practice costs and earnings in the general economy (P.L. 92-603) and, in the Omnibus Budget Reconciliation Act of 1987 (P.L. 100-203), Congress implemented payment reductions on 11 selected surgical procedures.

If the beneficiary receives a service from a physician who accepts Medicare's reasonable charge as payment in full, the beneficiary can "assign" Medicare's payment to the physician. In this case, if the physician wishes to "balance bill," i.e., receive a payment greater than the Medicare allowed charge, then the physician must bill the patient for the entire amount. For these "unassigned" services, the beneficiary is reimbursed on the basis of the reasonable charge by the Medicare program.

Physicians can participate in the Medicare program in two ways. They can become "participating physicians" whereby they agree to accept assignment for all services rendered, or they can be "nonparticipating" whereby they have the flexibility to accept assignment on a claim-by-claim basis. In either case, the beneficiary is responsible to the physician for the $75 annual deductible and for 20 percent of the reasonable charge as a copayment.

Except for the fee freeze period when Medicare actual charges for nonparticipating physicians were frozen at levels in effect during the April-June 1984 quarter of 1984, there have not been any limits on the amount physicians could actually charge beneficiaries until the recent implementation of the maximum allowable actual charge (MAAC) for nonparticipating physicians. Since January 1, 1987, a MAAC is computed for each service provided by each nonparticipating physician and is updated annually.

APPENDIX B

Technical Documentation for HCFA RVS Simulations

Basic Methods

1. Part B Medicare Annual Data (BMAD) procedure file (1987), beneficiary file (1987) and provider file (1986 by the Center for Health Economics Research (CHER) and 1987) provided basic data. The procedure file is a 100 percent sample. The provider file is a 5 percent sample.

2. Data included in the simulations were limited to the procedures for which Harvard has created RBRVS values and the specialties covered by the initial Harvard RBRVS project.

3. Anesthesia (Anesthesiologists and Oral Surgeons) were excluded. Rheumatologists are not separately identified by HCFA data so are included with internal medicine.

4. Various edits were performed on specific files.

    A. Provider file -- the providers having less than $100 for the year in Medicare allowed charges were deleted.
    B. Beneficiary file -- no special edits.

5. For most simulations, charge data were aged to 1988. Frequency of services were not adjusted.

6. Beneficiary file estimates were derived from a 1 percent sample, and then cross-checked against a replicated 1 percent sample.

7. Estimates derived from the three base files were cross-checked for reasonableness- by comparing total dollars and average allowed charges for procedures.

8. The fundamental estimate in most analyses compares the 1988 estimates of Medicare allowed charges (and related submitted charges if relevant) with payments that would be yielded by a Harvard RBRVS based fee schedule or some variant.

9. Besides the Harvard multiplicative model (work * opportunity cost factor * practice cost factor), several additive models (work * opportunity cost plus overhead cost factor) were used. For the additive models, allowed charges (AC) were split into allowed charges for each of the two additive factors. Tab A provides the formula used to determine AC under each model.

10. Calculations were also made with or without geographic practice cost indexes (GPCI) applied to the multiplicative model and one or both components in the additive model (for instance, one HCFA model applies a GPCI only to the overhead cost factor for each procedure).

11. The procedure file yielded estimates at the procedure, specialty and locality level. To estimate volume changes, however, the change in total Medicare allowed charges (for the studied procedures) for each sample practice was estimated using the provider file. For beneficiary cost-sharing estimates, all bills (for studied procedures) provided to a sample beneficiary during the year were considered.

12. The allowed charges under RBRVS were estimated by first, calculating the number of RBRVS units under each payment model and dividing that sum into the comparable current Medicare 1988 estimates of volume weighted allowed charges. This yielded a conversion factor (dollar amount per relative value unit) that could be used to convert each procedure's RBRV unit value into an allowed charge.

13. Conversion factor estimates vary from model to model because aggregate RBRVS vary according to the formula used and any volume assumptions.

14. Budget neutral conversion factor estimates were made at national, locality and specialty levels when appropriate. (An example of a rather implausible option would be a model that combined a GPCI with locality-specific budget neutral factors.)

Models for Calculating Procedure Relative Values

Model Name	Formula
1. Harvard RBRVS	$AC=(TW)*(1+RPC)*(1+AST)*CF$
2. PPRC ADDITIVE	$AC=[(TW*CFW)+(PC*G*CCF)]$
3. HCFA ADDITIVE NO GPCI	$AC=[(TW)*(1+AST)*WCF]+(TW*OCF_S)$
4. HCFA ADDITIVE GPCI ON BOTH COMPONENTS	$AC=[TW*PROF_1*WCF*(1+AST)]+(TW*GPCI_{OH}*OCF_S)$
5. HCFA ADDITIVE GPCI ON OVERHEAD COSTS	$AC=[TW*WCF*(1+AST)]+(TW*GPCI_{OH}*OCF_S)$
6. Charge Based	AC=NATIONAL AVERAGE MEDICARE ALLOWED CHARGE

Definitions

RBRVS = Resource-Based Relative Value Scale
AC = Allowed Charge under Model
TW = Total Work (Harvard Estimate) - (Procedure Specific)
RPC = Relative Practice Costs (Harvard Estimate) - (Specialty Specific)
AST = Amortized Opportunity Costs of Specialty Training (Harvard Estimate) - (Specialty Specific)
CF = Budget Neutral Conversion Factor
PC = Estimated Practice Costs (PPRC Estimate)
G = Geographic Adjuster (PPRC Estimate)
CCF = Cost Conversion Factor (PPRC)
CFW = Work Conversion Factor (PPRC Estimate)
OCF_S = Overhead Conversion Factor (Specialty-Specific)

$$= \frac{\sum_{p=1,P}\ \sum_{l=1,L}\ \{[ALLOW_{pl} * (PC_s)] * ALLOWEDSERV_{pl}\}}{\sum_{p=1,P}\ \sum_{l=1,L}\ (TW * ALLOWEDSERV_{pl})}$$

WCF = Work Conversion Factor

$$ALLOWEDSERV_{pls} = \frac{\sum_{p=1,P}\ \sum_{l=1,L}\ \sum_{s=1,S}[ALLOW_{pls} * (1-PC_s) *}{\sum_{p=1,P}\ \sum_{l=1,L}\ \sum_{s=1,S}(TW*(1+AST)* ALLOWEDSERV_{pls})}$$

GPCI = Geographic Practice Cost Index
$GPCI_{OH}$ = GPCI Overhead Index
PROF = Index of 1979 Median Hourly Wage for Workers in Professional Specialty Occupations with 5 or more years of College (Census) (Specialty-Specific)
P = Procedure
S = Specialty
L = Locality
ALLOW = Allowed Charges under Current System
PC_S = Practice Cost Percentage (Specialty-Specific)
ALLOWEDSERV = Allowed Services

Refined Geographic Practice Cost Index (GPCI) Models

Model Name	Formula
1. GPCI Professional Index	GPCI_PROF = .542*PROF + .157*STAFF + .111*RENT + .056*MI + .142
2. GPCI Managerial and Professional Index	GPCI_MP = .542*MP + .157*STAFF + .111*RENT + .056*MI + .142
3. GPCI HCFA Wage Index	GPCI_WAGE = .542*WAGE + .157*STAFF + .111*RENT + .056*MI + .142
4. GPCI Per Capita Index	GPCI_PCAP = .542*PCAP + .157*STAFF + .111*RENT + .056*MI + .142
5. GPCI No-Variation Index	GPCI_NOVR = .542*1 + .157*STAFF + .111*RENT + .056*MI + .142

6. GPCI Overhead Index

GPCI_Overhead = .352*STAFF + .238*RENT + .120*MI + .305

DEFINITIONS

PROF Index of 1979 Median Hourly Wage for Workers in Professional Specialty Occupations with 5 or more years of College (Census)

STAFF Index of 1979 Median Hourly Wage for Administrative Support Workers, Health Technologists and Techs, and Registered Nurses(Census)

RENT Index of 1987 HUD Fair Market Rent for 4-Bedroom Apt

MI Index of 1985-86 state-average medical malpractice insurance premium for 100,000/300,000 mature claims-made coverage

MP Index of 1979 Median Hourly Wage for workers in Managerial and Professional Specialty Occupations with 4 or more years of College (Census)

WAGE Index based on HCFA Gross Hospital Wage Index

PCAP Index of 1980 Per Capita Income

APPENDIX C

Geographic Practice Cost Indices

In the Omnibus Budget Reconciliation Act of 1986, the Secretary was required to develop and assess an interim index to measure "justifiable" geographic differences in physicians' costs of providing services by January 1, 1988 and a refined index suitable for adjusting relative value and fee schedules by December 31, 1989. In as much as the RBRVS is based on resource costs, and because costs of some resources vary from one geographic area to another, it is important to consider how RBRVS-based payments might appropriately be adjusted from one geographic area to another.

The customary, prevailing, and reasonable payment system through its use of local prevailing charges generally provides higher payments for services rendered in areas where the costs of practice and living are higher, although variations in payments do not appear to adhere closely to these differences in costs. Any RVS could be implemented in such a way as to roughly preserve the current geographic differences in payment through calculating a locality specific conversion factor so that the total level of payments to that locality would be unchanged. An alternative would be to adjust the national fee schedule with a Geographic Practice Cost Index (GPCI). A GPCI, on the other hand, measures differences in the levels of physicians cost of providing services in different geographic areas.

Inputs to a GPCI. A GPCI should reflect geographic differences in the "marketbasket" of resource inputs needed to operate a physician's practice. These might include:

Input Components	Percentage of 1987 Practice Costs (AMA's SMS)
Physicians Own Time (Net Income)	54.2 %
Nonphysician Employee Wages	15.7 %
Office Rents	11.1 %
Malpractice Insurance	5.6 %
Medical Supplies	5.0 %
Medical Equipment	2.4 %
"Other" Expenses	6.0 %

These categories or input prices are combined in the GPCI by the national cost shares that are the ratio of costs to total practice income (cost shares or weights)[1]. The last three categories have national

---

[1]These components are the same as those used in the construction of the Medicare Economic Index (MEI). However, the cost shares used in the construction of the GPCIs differ from those used in the MEI. Although the MEI is updated regularly, the cost shares have not been updated since 1977. The cost shares used in the construction of the refined GPCIs that are used in this report are based upon more current data and, thus, differ from the MEI cost shares.

markets and are assigned national average cost shares and constant input prices of 1 in the GPCI(s).

Index Form. The index form most commonly used in the Government and proposed for the GPCIs is called a Laspeyres Price Index. It measures the cost at an area level of purchasing a national marketbasket of resources relative to the average national costs of purchasing the same marketbasket of resources. Technically, this formula is the sum of the area prices times the national cost shares divided by the sum of the weights national prices times the national shares. Laspeyres indices require rebasing at regular intervals in order to capture changes in the cost shares. If, for example, the percentage of a physician's office costs that are spent on malpractice insurance is rapidly changing, that would require the cost shares to be recomputed. Laspeyres indices, also, do not capture differences in prices that are due to differences in quality -- again because of the fixed national cost shares.

Geographic Unit. Ideally, the geographic area for which the GPCI(s) is computed should correspond to the market areas in which physicians purchase their inputs. Geographic areas should meet somewhat conflicting criteria: first, the areas should be defined so that the physicians within the area face the same set of input prices; second, areas should be self-contained to minimize border crossing; and third, areas should be compatible with current administrative areas (e.g., carrier localities) for ease of implementation. Counties and zip code areas fit with the first criterion but are so small that they might impose arbitrary divisions and create opportunities for physician's to "game" the system. Metropolitan Statistical Areas fit the first two criteria, but are not particularly related to Medicare carrier localities. Carrier localities are operationally desirable for their ease of implementation, but the definition of localities varies from carrier to carrier and in many cases they do not fit the first two criteria. State or regions for the most part would often meet the second criterion of limiting border-crossing opportunities, but not the first since there may be more cost variation within such areas than among them.

Cost Shares (Weights). As discussed earlier in the summary, a GPCI is composed of estimates of the local prices of the index components weighted by the national cost shares of the index components. A GPCI is valid only if the relative weights are correct. There is some empirical evidence to suggest that the relative cost shares are not uniform across specialties and across geographic areas. It might be desirable to have separate practice costs shares for different specialties since specialties can produce very different outputs and may be employing different mixes of the categories of resources. Further, the mix or distribution of specialists

varies from area to area. An examination of the cost shares by specialty, however, shows that most specialties face similar sets of costs with only radiologists, anesthesiologists, pathologists, and psychiatrists differing to any degree. Moreover, studies by the Urban Institute and others have shown that using specialty specific cost shares have little impact on the values of the GPCIs. There, also, may be an argument for having an urban and rural set of weights, since there may be costs associated with maintaining a rural practice that are not present in an urban practice. For example, a physician in a rural area may need to maintain capital equipment such as x-ray machinery that is not necessary in urban areas. In addition, rural practices can rarely achieve the size and consequent economies of scale that are possible in urban areas. Health Care Financing Administration (HCFA) grantees -- The Urban Institute and the Center for Health Economics Research (CHER) -- are studying this problem and will discuss it in their final report.

Input Price Measures. In the GPCI(s), the same resource categories are used for the local price measures as for the weights. The resource category of the valuation of physician's own time (net income) is the single most important item in the construction of the GPCI, representing 54 percent of practice costs.

Physician's Own Time. The fundamental reason for acknowledging area cost differences in this potential component would be to compensate physicians at the same real rate across the nation (i.e., adjusted for the cost of living in the area). This may be a preferable option if the desire is to compensate physicians equitably across areas -- to "level the playing field." There are several potential ways to measure this price and choosing a proxy for this category hinges on our understanding of how locational decisions are made by physicians.

Since physicians are free to work where they desire and at the job of their choice, the physician's time must be purchased in a national market. Although payments for physician services may be distorted relative to the payments for physician services that would occur in a fully competitive market, many of the factors that determine where physicians practice and how much time they work are those of a conventional market. They are likely to select sites that provide monetary, emotional, social, and or intellectual rewards that meet their personal needs. For a physician, the relation between income and cost of living is clearly one factor influencing the decision on where to practice, but other factors are probably important as well, including opportunity to share work with other physicians, a supportive practice environment, and the social, educational, and physical opportunities of the location. Thus, while cost of living influences the physician's decision on where to locate, it is not clear that cost of living is determining; many who have studied physician shortages believe that attracting physicians to shortage areas will be difficult even if net income bears the same relationship to cost of living in shortage areas that it does in areas where physicians are plentiful. Further, attracting physicians to live in rural areas may be difficult because the conditions of practice (solo practice, long hours, and inability to specialize) are stressful and physicians do not like living in isolation from professional

colleagues and the amenities of city life. This argues that basing the measure of physician's own time on cost-of-living would overcompensate the high cost-of-living areas and undercompensate the low cost-of-living areas. Moreover, there are no available cost of living data that measure variation across all areas of the country, and the accuracy of the values of any of the available cost-of-living indices is questionable.

A solution to this problem is to use measures of earnings that incorporate both cost of living data and amenities. There are a number of potential earnings data proxies based on Census data such as the hourly earnings of professionals, hourly earnings of professionals and managers, the hourly earnings of all workers, hourly earnings of all white collar workers, and measures based on per capita income, and HCFA wage index. The argument for using the first two proxies is to model the geographic differences in physician's own time by a group with similar tastes and preferences. The central weakness with this argument is that if there is less demand for other professionals in a particular area than for physicians then the payment determined from the earnings of other professionals may not be sufficient to attract an adequate number of physicians. The latter proxies are based on an equity or leveling argument -- why should physicians be treated any differently than the average citizen. The cost of living and locational preferences for an average citizen, however, may not be a good proxy for the cost of living and amenity preferences of physicians and any adjustments based on these proxies might lead to, at the very least, inappropriate payments.

Overhead Costs. In the GPCIs developed by the Urban Institute and CHER there are three overhead components that have local price measures:

> Employee wages as measured by the median hourly earnings of workers in administrative support, health technologist, and registered nursing occupations from the 1980 Census. The Urban Institute and CHER are examining ways to update this proxy, but any adjustment will only be approximate and based on broad regional patterns.
>
> Office rents that are based on the HUD apartment "fair market rents." This series only includes residential data and if the geographic level of prices is different for commercial compared to residential rents, the results will be biased in some unknown way. This series, because of rent control, is clearly problematic for New York City.
>
> Malpractice insurance premiums as measured by estimates of actual expenses for $100,000/$300,000 of professional liability coverage from the HCFA Survey of Malpractice Insurers weighted by specialty. Since these data are for a limited and now somewhat uncommon coverage option, it may not reflect the true unknown geographic price dispersion of all malpractice coverage.

There is some debate as to whether a measure of physician's own time should be included in the construction of the GPCI. There is some feeling that including this measure would, in some way, disadvantage rural areas and, further, that the government does not adjust employee salaries or social security payments for cost of living and amenities in any other

areas. However, this policy would pay physicians only nominally the same and it would be very different in real terms. This issue warrants further consideration.

Update Factors. Since the price measure for physicians own time and employee wages are based on 1980 data, they may not reflect current geographic cost differences. Update factors for these components might be obtained from other more recent but more aggregated data sources such as the Consumer Price Index, the Current Population Survey, or the Area Wage Survey (for employee wages, only). The proposed update factors from the different sources appear to be consistent in direction and effect, but further study is needed to determine their desirability.

APPENDIX D

Allowed Charges by HCPCS for Additive RVS Models

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-80TH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-80TH
TOTAL		11986556190	241884019	-0	-0	-0	50	50	50	50
11100	BIOPSY OF LESIO	23372339	554847	12	12	13	42	47	47	48
11101	BIOPSY, EACH AD	2822922	122412	25	24	23	23	29	29	28
11200	REMOVAL OF SKIN	1827496	53718	-5	-5	-5	34	32	32	32
11201	REMOVAL OF SKIN	115594	7969	76	72	70	15	26	25	25
11400	REMOVAL OF SKIN	4356464	119656	6	5	5	36	39	38	38
11401	REMOVAL OF SKIN	6835162	148997	-1	-2	-2	46	45	45	45
11402	REMOVAL OF SKIN	9503772	152041	-1	-1	-0	63	62	62	62
11403	REMOVAL OF SKIN	4436836	50933	-1	-1	-1	87	86	86	86
11404	REMOVAL OF SKIN	2302415	20920	0	0	-0	110	110	110	110
11406	REMOVAL OF SKIN	3116673	19705	5	6	6	158	166	168	168
11420	REMOVAL OF SKIN	2446059	64984	8	7	6	38	41	40	40
11421	REMOVAL OF SKIN	4066321	82061	3	2	2	50	51	51	51
11422	REMOVAL OF SKIN	4606588	67436	4	3	3	68	71	70	70
11423	REMOVAL OF SKIN	2011974	20351	-1	-2	-2	99	97	97	97
11424	REMOVAL OF SKIN	811567	7176	7	7	6	113	121	121	120
11426	REMOVAL OF SKIN	810865	5363	10	11	11	151	166	168	168
11440	REMOVAL OF SKIN	7834392	161891	0	-1	-1	48	49	48	48
11441	REMOVAL OF SKIN	10492895	172195	-5	-6	-6	61	58	57	57
11442	REMOVAL OF SKIN	9232148	119091	-0	-1	-1	78	77	77	77
11443	REMOVAL OF SKIN	2618379	25213	1	0	-0	104	105	104	104
11444	REMOVAL OF SKIN	816867	7119	12	11	11	115	129	128	128
11446		471602	3424	16	16	16	138	159	159	159
11450	EXCISION OF SKI	44278	266	24	25	25	166	207	207	208
11451	EXCISION OF SKI	12347	74	103	109	113	167	339	349	355
11462	EXCISION OF SKI	33664	218	18	17	16	154	182	181	179
11463	EXCISION OF SKI	6316	23	-20	-19	-18	275	221	222	225
11470	EXCISION OF SKI	21346	139	26	27	28	154	193	195	196
11471	EXCISION OF SKI	10417	45	11	12	12	231	258	259	260
11600	REMOVAL OF SKIN	1730773	20017	-9	-9	-8	86	79	79	79
11601	REMOVAL OF SKIN	4398156	43322	-18	-18	-18	102	84	83	84
11602	REMOVAL OF SKIN	9560047	70739	-20	-20	-19	135	109	109	109
11603	REMOVAL OF SKIN	4481134	26564	-20	-20	-19	169	136	136	136
11604	REMOVAL OF SKIN	2035670	10485	-14	-14	-14	194	167	167	167
11606	REMOVAL OF SKIN	2513464	9765	-2	-2	-2	257	251	253	253
11620	REMOVAL OF SKIN	1252189	13234	-16	-18	-18	95	79	78	77
11621	REMOVAL OF SKIN	3774750	30165	-23	-25	-25	125	96	94	93
11622	REMOVAL OF SKIN	6367441	38879	-24	-25	-26	164	124	122	121
11623	REMOVAL OF SKIN	2537182	13565	-19	-20	-21	187	151	149	148
11624	REMOVAL OF SKIN	1148352	4930	-29	-30	-30	233	165	163	162
11626	REMOVAL OF SKIN	945950	3437	-4	-4	-5	275	264	263	262
11640	REMOVAL OF SKIN	10223656	82703	-22	-23	-24	124	96	95	95
11641	REMOVAL OF SKIN	21944929	141298	-25	-26	-27	155	117	115	114
11642	REMOVAL OF SKIN	28327881	144775	-25	-26	-27	196	146	144	143
11643	REMOVAL OF SKIN	8475381	37905	-19	-20	-20	224	182	180	179
11644	REMOVAL OF SKIN	3242491	12299	-15	-15	-15	264	225	224	224
11646	REMOVAL OF SKIN	1855122	5804	-22	-22	-23	320	250	248	246
11900	INJECTION INTO	1539297	81199	21	22	26	19	23	23	24
11901	ADDED SKIN LESI	1103341	33067	12	17	23	33	38	39	41
11950	SUBCUTANEOUS IN	14376	236	78	85	95	61	108	113	119

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
11951	SUBCUTANEOUS IN	3258	65	199	188	175	50	150	144	138
11954	SUBCUTANEOUS IN	730	19	97	89	86	38	76	73	72
12001	REPAIR SUPERFIC	2188856	50781	10	9	6	37	41	41	40
12002	REPAIR SUPERFIC	2541558	49835	10	9	6	51	56	56	54
12004	REPAIR SUPERFIC	578496	8180	5	4	0	71	75	73	71
12011	REPAIR SUPERFIC	1025430	22204	20	19	17	46	55	55	54
12013	REPAIR SUPERFIC	883239	14307	14	13	10	62	71	70	68
19100	BIOPSY OF BREAS	1045677	17262	19	21	23	61	72	73	74
19101	BIOPSY OF BREAS	4056353	18969	-10	-11	-12	214	193	191	189
19120	REMOVAL OF BREA	23735908	84413	-13	-13	-13	281	244	244	243
19140	REMOVAL OF BREA	1054313	2441	-10	-10	-10	432	391	390	389
19160	REMOVAL OF BREA	6080066	16154	-11	-9	-8	376	333	341	346
19162	REMOVE BREAST T	3169491	3188	-28	-26	-25	994	719	738	750
19180	REMOVAL OF BREA	3157419	5758	-13	-13	-13	548	477	477	475
19182	REMOVAL OF BREA	290044	487	26	27	27	596	751	756	758
19200	EXTENSIVE BREAS	2581196	2368	-28	-28	-28	1090	787	788	783
19220	EXTENSIVE BREAS	360406	319	-22	-21	-20	1130	885	896	901
19240	EXTENSIVE BREAS	44932160	43979	-23	-22	-23	1022	791	792	788
20500	INJECTION OF SI	64826	2587	42	45	49	25	36	36	37
20501		62045	1717	113	124	132	36	77	81	84
20520		68115	1273	72	71	68	54	92	91	90
20525		107563	650	96	95	92	165	324	322	318
20550	INJECTION TREAT	8563960	355783	56	57	57	24	37	38	38
20600	DRAINAGE JOINT/	2947741	117409	101	100	100	25	51	50	50
20605	DRAINAGE JOINT/	5588360	197359	80	79	79	28	51	51	51
20610	INJECT/DRAIN JO	33702411	1127231	69	69	69	30	51	51	51
20615		57645	1467	44	44	44	39	57	57	57
21200	OSTEOMY; MANDIB	41068	42	19	23	27	978	1159	1206	1244
21202	MANDIBLE, SEGME	36608	32	-18	-16	-14	1144	936	961	985
21203	MANDIBLE, RAMUS	23523	20	-3	-0	2	1176	1142	1174	1198
21204		4838	3	-25	-26	-27	1613	1217	1197	1172
21206	MAXILLA, SEGMEN	3860	4	11	9	9	965	1066	1054	1050
21230	GRAFT; RIB CART	24251	30	-36	-36	-36	808	515	517	515
21235	GRAFT; EAR CART	50774	119	8	8	7	427	462	459	457
21242		9692	7	-35	-34	-31	1385	893	920	957
21310	TREAT. OF NASAL	64339	853	-41	-40	-40	75	45	45	46
21315	MANIPULATIVE TR	40854	340	1	0	0	120	121	121	120
21320	MANIPULATIVE TR	203414	988	-18	-18	-18	206	169	169	169
21325		28148	101	11	11	12	279	308	310	313
21330		65561	138	-5	-3	-1	475	451	460	471
21335	REPAIR OF NOSE	308443	308	-22	-22	-22	1001	779	778	784
21337		23412	104	-13	-11	-8	225	196	201	207
21360		60037	125	20	19	19	480	577	573	572
21365	REPAIR CHEEK BO	182572	225	17	15	12	811	951	930	912
21385		52086	78	17	17	16	668	784	778	778
21386		23950	34	27	24	23	704	892	874	864
21390		92585	99	23	25	27	935	1151	1170	1186
21421		6326	21	60	56	54	301	482	471	465
21440		400	2	29	21	14	200	258	242	228
21450		6356	25	6	8	9	254	270	275	278

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
21451		3498	9	13	14	13	389	441	442	438
21454		17174	43	45	41	39	399	580	564	556
21455	CLOSED MAIPULAT	39807	74	-13	-13	-14	538	469	467	464
21461		23180	32	-11	-15	-17	724	641	617	600
21462		39508	48	-10	-11	-13	823	742	732	719
21470	REPAIR LOWER JA	115090	105	-11	-12	-12	1096	976	968	963
21480		22024	322	-7	-8	-10	68	64	63	62
21485		13062	88	3	2	1	148	153	152	150
24640	TREATMENT OF RA	1602	31	-43	-44	-46	52	29	29	28
27125	REVISE HIP WITH	23833589	15747	-32	-32	-33	1514	1030	1022	1017
27126	REVISE HIP WITH	2045350	1330	-31	-31	-31	1538	1062	1059	1063
27127	REVISE HIP WITH	1843145	959	-37	-37	-37	1922	1220	1214	1205
27130	TOTAL HIP JOINT	140878327	55606	-39	-39	-39	2534	1545	1542	1539
27131	ARTHROPLASTY, C	486914	207	-24	-26	-27	2352	1793	1745	1711
27135	REVISION OF ART	773938	291	-32	-33	-34	2660	1800	1784	1760
27170	REPAIR/GRAFT FE	650820	529	-28	-28	-28	1230	890	891	890
27175		89808	946	3	21	31	95	98	115	124
27176		45464	37	-40	-38	-37	1229	742	761	776
27177		65619	58	-26	-25	-24	1131	836	849	859
27190		41240	265	-4	-4	-4	156	150	150	150
27196		18099	187	4	3	-0	97	101	100	97
27200		16725	164	-38	-39	-39	102	63	63	63
27210	TREAT PELVIS FR	1955795	6555	-19	-19	-19	298	242	242	242
27211	TREAT PELVIS FR	7821	20	-4	-9	-12	391	375	354	342
27214		135817	158	5	5	6	860	900	906	913
27220		174850	663	12	11	11	264	295	293	292
27222		189359	494	26	30	33	383	483	500	510
27225		122761	83	28	28	29	1479	1894	1900	1915
27230	TREAT FRACTURE	622044	2310	-11	-10	-10	269	241	242	241
27232	TREAT FRACTURE	449223	727	-17	-14	-12	618	512	530	541
27234	REPAIR FRACTURE	707660	455	0	10	15	1555	1562	1708	1786
27235	REPAIR OF FEMUR	11237171	9170	-13	-13	-13	1225	1071	1066	1062
27236	REPAIR OF FEMUR	68244464	53562	-12	-13	-14	1274	1116	1104	1094
27238	TREATMENT OF FE	401221	1180	23	24	24	340	417	422	422
27240	TREATMENT OF FE	576344	843	2	4	6	684	700	714	724
27242	REPAIR OF FEMUR	392628	411	22	25	26	955	1164	1189	1205
27244	REPAIR OF FEMUR	102389720	83064	-10	-10	-11	1233	1113	1104	1097
27246		283091	901	-17	-17	-17	314	261	260	260
27248	REPAIR OF FEMUR	647993	761	10	10	10	852	937	936	936
27250	TREAT HIP DISLO	321544	1448	18	18	17	222	263	261	260
27252	TREAT HIP DISLO	1433897	4626	9	9	8	310	339	338	335
27253	REPAIR OF HIP D	423249	444	-21	-21	-21	953	756	753	751
27256		8163	62	142	166	182	132	319	351	372
28200		27075	105	-26	-25	-25	258	192	193	194
28208		40502	243	-22	-24	-25	167	129	127	125
28220		18682	97	-38	-38	-38	193	119	119	119
28225		15888	135	-15	-16	-17	118	100	99	98
28230	INCISION OF FOO	45508	306	2	2	3	118	120	120	121
28232		38807	546	15	13	12	71	82	80	79
28238	ADVANCEMENT OF	23418	47	-40	-39	-39	498	300	303	306

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
28240	TENTOMY LENGHTE	17367	120	-11	-11	-11	145	129	129	129
28250	DIV. OF PLANTAR	26356	100	-29	-31	-32	264	187	182	178
28260		15254	49	-24	-22	-21	311	236	242	245
28261	CAPSULOTOMY WIT	38075	92	-40	-37	-35	414	249	260	268
28262	CAPSULOTOMY WIT	35493	81	26	25	23	438	552	546	538
28270	RELEASE OF FOOT	195827	1495	-15	-15	-15	131	112	111	111
28272	RELEASE OF TOE	20750	204	-6	-7	-7	102	95	94	94
28280	WEBBING OPERATI	91273	743	-14	-15	-16	123	105	104	103
28285	REVISION OF HAM	2269190	11490	-10	-12	-13	197	177	174	172
28286		44611	182	-22	-22	-23	245	192	190	189
28288	PARTIAL REMOVAL	295870	1554	-12	-12	-13	190	168	167	166
28290	CORRECTION OF B	938509	2628	-26	-26	-27	357	266	263	261
28292	CORRECTION OF B	3106776	6119	-33	-34	-35	508	339	334	332
28293	CORRECTION OF B	830064	1443	-35	-35	-35	575	376	373	372
28294	CORRECTION OF B	48029	85	-32	-32	-32	565	383	384	385
28296	CORRECTION OF B	1860687	2987	-35	-35	-36	623	408	402	399
28298	CORRECTION OF B	244547	536	-29	-30	-31	456	323	318	314
28300	OSTEOTOMY; CACO	33105	71	-35	-34	-33	466	303	308	311
28304		27790	68	-35	-36	-36	409	264	263	263
28306	INCISION OF MET	236388	679	-33	-34	-34	348	233	230	228
28308	INCISION OF MET	355682	1131	-30	-31	-32	314	219	217	215
28309	OSTEOTOMY FOR C	54933	109	-40	-40	-39	504	303	304	306
28310	REVISION OF BIG	61633	283	-27	-26	-26	218	160	161	162
28312	REVISION OF TOE	68325	374	-8	-9	-10	183	169	166	164
28315	REMOVAL OF SESA	45441	200	-21	-22	-23	227	180	177	176
28322		13356	37	-34	-35	-36	361	239	236	232
29815	ARTHOSCOPY, SHO	116432	414	-24	-25	-26	281	214	211	209
29819	ARTHOSCOPY, SHO	75673	115	-38	-37	-37	658	409	412	414
29820	SHOULDER ARTHRO	94600	167	-23	-25	-26	566	436	427	419
29822	ARTHOSCOPY, DEB	143530	191	-42	-42	-43	751	438	433	429
29823	ARTHOSCOPY, DEB	575156	610	-51	-52	-52	943	462	457	452
29870	KNEE ARTHROSCOP	1264916	4304	-40	-40	-39	294	176	178	179
29871	ARTHOSCOPY FOR	264113	499	-46	-46	-46	529	284	285	284
29872		193593	329	-52	-52	-51	588	285	285	286
29874	KNEE ARTHROSCOP	1355237	1902	-44	-45	-45	713	401	395	391
29875	KNEE ARTHROSCOP	1542458	2437	-32	-32	-33	633	433	428	425
29876	ARTHOSCOPY,SYNO	1633594	1777	-50	-50	-50	919	459	457	455
29877	KNEE ARTHROSCOP	8269253	9724	-52	-53	-53	850	406	403	401
29879		2431720	2259	-55	-55	-55	1076	482	481	481
29881	KNEE ARTHROSCOP	23976979	22856	-54	-54	-55	1049	482	479	477
29882	ARTHOSCOPY WITH	684759	699	-55	-55	-55	980	441	444	445
29887	DRILLIING FOR O	93432	127	-39	-39	-38	736	446	449	454
29890		25284	73	-28	-28	-29	346	250	248	245
29894	ARTHPSCOPY/REMO	38563	49	-47	-47	-47	787	420	419	418
29895		48225	65	-45	-45	-45	742	410	411	409
29897		34965	63	-57	-58	-58	555	239	234	234
30400		50509	86	-23	-23	-21	587	453	454	462
30410	RHINOPLASTY,	95654	92	-43	-44	-43	1040	592	587	590
30420	RECONSTRUCTION	702744	545	-46	-46	-45	1289	700	702	709
30430		5418	32	40	42	46	169	237	241	248

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND OPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO OPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHAROE WITH NO GPCI	RVS MEAN CHAROE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
30500	RESECTION OF NA	21177	45	-1	-4	-6	471	467	452	444
30520	REPAIR OF NASAL	4783586	7610	-37	-38	-39	629	395	388	383
30560		10322	270	61	59	58	38	61	61	60
30580	LYSIS INTRANASA	26582	61	-67	-68	-68	436	143	141	140
30600		14338	75	-15	-15	-14	191	163	162	164
30620	RECONSTRUCTION	701812	1084	-32	-33	-33	721	491	487	486
30630	REPAIR OF NASAL	49232	117	-24	-26	-27	421	320	313	309
31000	IRRIGATION MAXI	325704	9497	-37	-36	-35	34	22	22	22
31001	IRRIGATION MAXI	557676	10671	-45	-42	-39	52	29	30	32
31002	SPHENOID SINUS	15068	440	-19	-11	-2	34	28	31	33
31020	EXPLORATION MAX	365338	2255	-28	-30	-31	162	117	114	112
31021	EXPLORATION OF	806440	3495	-26	-28	-30	231	171	166	162
31030	EXPLORATION MAX	1909641	2809	-48	-49	-50	680	351	344	340
31031	EXPLORATION OF	1135521	1141	-50	-51	-51	995	501	491	485
31032	EXPLORE SINUS,R	433690	608	-47	-47	-47	713	381	378	377
31033		317244	345	-41	-42	-43	920	542	534	528
31050	SINUSOTOMY, SPH	294647	801	-10	-12	-13	368	331	323	319
31070		69854	242	-12	-14	-16	289	254	247	242
31075	SINUSOTOMY, UNL	92926	150	-38	-39	-40	620	384	377	372
31090	EXPLORATION OF	1520688	964	-52	-52	-51	1577	759	763	768
31300	LARYNGOTOMY WIT	149789	185	-44	-44	-44	810	457	454	454
31360	REMOVAL OF LARY	1890210	1194	-32	-33	-33	1583	1074	1063	1057
31365	REMOVAL OF LARY	2104869	920	-36	-36	-36	2288	1462	1454	1456
31368	PARTIAL REMOVAL	339971	148	-35	-35	-36	2297	1501	1491	1482
31370	PARTIAL REMOVAL	254391	173	-52	-52	-51	1470	703	707	713
31400		48448	55	-73	-72	-72	881	240	244	248
31500	INSERTION OF WI	4692156	58829	20	20	19	80	96	96	95
31505	DIAGNOSTIC LARY	762794	26055	-21	-21	-21	29	23	23	23
31510	LARYNGOTOMY WIT	37207	587	62	59	56	63	103	101	99
31511	LARYNGOTOMY/REM	34088	620	18	21	24	55	65	67	68
31512	LARYNGOTOMY/REM	16164	56	-5	-4	-1	289	273	278	285
31515	LARYNGOSCOPY FO	220130	2364	4	6	10	93	97	99	102
31520		6210	55	-12	-12	-11	113	99	99	101
31525	DIAGNOSTIC LARY	3020230	19572	-22	-19	-15	154	121	126	131
31526	DIAGNOSTIC LARY	401785	1677	-13	-14	-14	240	209	207	207
31527	LARYNGOTOMY/IN	6655	29	-47	-47	-46	229	121	122	124
31528		47095	237	-32	-31	-30	199	136	137	139
31530	OPERATIVE LARYN	248948	829	-23	-21	-18	300	231	238	246
31531	LARYNGOTOMY	68535	194	-10	-11	-11	353	318	315	315
31535	OPERATIVE LARYN	2684667	8988	-19	-19	-19	299	241	241	243
31536	OPERATIVE LARYN	2098322	5339	-23	-25	-25	393	302	297	294
31540	OPERATIVE LARYN	1172843	2719	-24	-24	-23	431	328	329	332
31541	OPERATIVE LARYN	4069799	7844	-29	-29	-29	519	371	369	370
31561	LARYNGOSCOPY, W	132100	164	-45	-45	-45	805	440	440	442
31570	LARYNGOSCOPY WI	267801	644	-25	-25	-24	416	311	314	317
31571	LARYNGOTOMY	221304	504	-23	-24	-24	439	339	336	334
31575	FIBERSCOPIC LAR	7809097	64363	-28	-26	-24	121	88	90	92
31576		74893	328	-9	-9	-9	228	209	208	208
31578	LARYNGOTOMY/RE	32729	86	2	4	6	381	388	396	404
31600	INCISION OF WIN	9110231	26272	-41	-40	-39	347	206	208	210

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
31601		22136	66	-30	-30	-31	335	236	233	233
31603	INCISION OF WIN	1114512	3074	-38	-37	-36	363	224	228	231
31605	TRACHEOSTOMY	83467	280	-36	-36	-36	298	190	190	190
31610		277326	528	-42	-41	-40	525	302	308	315
31612	TRACHEAL PUNCTU	20813	278	-20	-18	-16	75	60	62	63
31613	TRACHEOSTOMA, R	132599	707	-34	-34	-34	188	125	124	125
31614	TRACHEOSTOMA	125757	273	-41	-42	-42	461	270	267	265
31615		104177	851	53	55	57	122	187	190	192
31620	BRONCHOSCOPY-DI	60439	308	35	28	24	196	264	251	243
31621	BRONCHOSCOPY-DI	234400	953	-7	-10	-11	246	228	221	218
31625	BRONCHOSCOPY WI	11384595	37096	-13	-14	-15	307	266	263	261
31626	BRONCHOSCOPY WI	265927	881	-4	-7	-10	302	290	279	273
31627	BRONCHOSCOPY WI	56018	196	-5	-8	-10	286	272	263	256
31628	BRONCHOSCOPY WI	4734288	12386	-26	-27	-28	382	282	279	275
31630	BRONCHOSCOPY/TR	84078	288	27	32	36	292	372	385	398
31635	REMOVE FOREIGN	201885	583	1	-0	-1	346	350	345	341
31640	EXCISION OF TUM	157558	396	35	39	43	398	538	553	568
31645	BRONCHOSCOPY, C	2051803	7879	-9	-7	-7	260	238	241	242
31646	BRONCHOSCOPY,RE	248664	1286	6	5	4	193	205	203	201
31650	BRONCHOSCOPY/TH	259	2	91	83	76	130	248	236	228
31656	BRONCHOSCOPY/IN	37216	155	-12	-13	-13	240	212	209	209
32000	DRAINAGE OF CHE	4014793	63082	165	162	159	64	169	167	165
32005	TREAT LUNG LINI	318996	3236	41	42	42	99	139	140	140
32020	TREATMENT OF CO	8304278	40915	10	9	9	203	223	222	221
32035	EXPLORATION OF	289472	517	16	17	18	560	651	658	661
32036		190353	321	14	15	16	593	674	684	690
32095	BIOPSY THROUGH	1768428	2528	-6	-6	-6	700	657	658	658
32100	EXPLORATION/BIO	4561140	4686	7	7	7	973	1037	1038	1041
32110	EXPLORE/REPAIR	393090	439	10	10	11	895	984	989	994
32120	RE-EXPLORATION	339338	406	16	17	18	836	971	978	985
32140	THORACOSTOMY WI	170890	153	25	24	24	1117	1401	1387	1383
32141	REMOVE/TREAT LU	558298	486	11	10	10	1149	1277	1268	1259
32150	THORACOSTOMY/RE	102173	147	41	43	45	695	977	996	1009
32160	THORACOSTOY WIT	169200	242	11	12	12	699	773	781	785
32220	RELEASE OF LUNG	859921	651	15	15	15	1321	1515	1516	1523
32310	REMOVAL OF CHES	223773	220	17	18	18	1017	1192	1198	1205
32320	FREE/REMOVE CHE	594003	358	-7	-4	-2	1659	1549	1590	1620
32400	NEEDLE BIOPSY C	480996	4420	-14	-14	-14	109	94	93	93
32402		197426	338	-1	-1	-0	584	581	581	582
32440	REMOVAL OF LUNG	3398724	1877	-10	-11	-12	1811	1621	1606	1596
32480	PARTIAL REMOVAL	20827844	12224	-12	-11	-11	1704	1506	1512	1515
32485	PARTIAL REMOVAL	262088	139	-4	-2	-1	1886	1819	1848	1866
32490	PARTIAL REMOVAL	314382	159	-11	-8	-6	1977	1762	1819	1851
32500	PARTIAL REMOVAL	5253237	4114	-7	-6	-6	1277	1190	1197	1202
32520	REMOVE LUNG & R	783415	419	-9	-8	-7	1870	1703	1718	1732
33010	DRAINAGE OF HEA	215146	1819	105	105	104	118	243	242	242
33011	PERICARDIOCENTE	5390	63	141	143	144	86	206	208	209
33015		42431	128	134	132	130	331	776	769	762
33206	INSERTION OF HE	10274827	9662	-63	-63	-63	1063	395	395	396
33207	INSERTION OF HE	29816363	27094	-62	-63	-63	1100	415	412	409

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
33208	INSERTION OF HE	12776408	9024	-62	-62	-62	1416	531	539	542
33210	INSERTION OF HE	7282914	22839	-68	-69	-69	319	101	100	99
33212	INSERTION OF PU	5777744	9792	-59	-59	-59	590	242	242	243
33216	REVISION IMPLAN	1312482	2532	-59	-59	-59	518	213	212	211
33218	REPAIR PACEMAKE	333854	779	-55	-55	-54	429	194	195	195
33219	REPAIR OF PACEM	791544	1321	-62	-62	-62	599	225	228	230
33232	REMOVAL OF PACE	320310	923	-46	-46	-46	347	187	187	187
33405	REPLACEMENT OF	23077134	8031	-27	-27	-26	2874	2092	2106	2117
33510	CABG, 1 GRAFT	14375882	5225	-42	-42	-42	2751	1602	1601	1603
33511	CABG, 2 GRAFTS	50137746	13550	-47	-47	-47	3700	1955	1957	1962
33512	CABG, 3 GRAFTS	116396201	28348	-49	-49	-48	4106	2109	2112	2120
33513	CABG, 4 GRAFTS	104406954	24052	-47	-48	-47	4341	2280	2278	2280
33514	CABG, 5 GRAFTS	43276788	9670	-47	-47	-47	4475	2373	2361	2360
33641	REPAIR HEART SE	346134	185	-15	-15	-16	1871	1595	1581	1575
33681	REPAIR HEART SE	233444	112	-13	-12	-11	2084	1815	1825	1848
33682	CLOSURE VENTRIC	221504	102	-8	-10	-11	2172	1992	1950	1932
35001	REPAIR DEFECT O	1303241	876	-19	-19	-19	1488	1209	1203	1200
35011	REPAIR DEFECT O	1161532	864	-24	-22	-21	1344	1020	1044	1065
35081	REPAIR DEFECT O	31919719	13943	-26	-27	-27	2289	1684	1674	1665
35082	REPAIR ARTERY R	10465746	3898	-33	-32	-32	2685	1811	1820	1819
35091	REPAIR DEFECT O	2138363	880	-22	-22	-22	2430	1900	1903	1906
35092	REPAIR ARTERY R	642373	236	-26	-26	-25	2722	2001	2018	2031
35102	REPAIR DEFECT O	11991516	5111	-23	-24	-24	2346	1803	1793	1784
35103	REPAIR ARTERY R	2469393	880	-33	-33	-33	2806	1878	1883	1884
35121	REPAIR DEFECT O	352863	214	-14	-15	-15	1649	1414	1409	1400
35131	REPAIR DEFECT O	1081813	794	1	0	0	1362	1371	1367	1363
35141	REPAIR DEFECT O	5418698	3834	-17	-17	-17	1413	1175	1174	1171
35142	REPAIR ARTERY R	471661	289	-21	-21	-21	1632	1287	1285	1286
35151	REPAIR DEFECT O	1021952	676	-16	-16	-16	1512	1266	1272	1276
35161	REPAIR DEFECT O	571303	473	-29	-29	-28	1208	860	863	868
35301	RECHANNELING OF	67407991	41497	-41	-41	-42	1624	958	950	944
35311	RECHANNELING OF	373560	176	-37	-32	-28	2123	1345	1454	1533
35321	RECHANNELING OF	1044169	855	-40	-38	-37	1221	728	753	771
35331	RECHANNELING OF	615796	491	-10	-9	-8	1254	1125	1142	1153
35341	RECHANNELING OF	549856	387	-26	-25	-24	1421	1054	1072	1086
35351	RECHANNELING OF	1310206	905	-37	-36	-35	1448	909	930	944
35361	RECHANNELING OF	1126774	593	-41	-36	-33	1900	1130	1208	1271
35371	RECHANNELING OF	6228609	5610	-29	-28	-28	1110	787	796	800
35381	RECHANNELING OF	4455788	3576	-28	-28	-28	1246	894	897	897
39400	VISUALIZATION O	3554773	7698	-1	-2	-2	462	455	453	453
42145	PALATOPHARYNGOP	319979	336	-54	-55	-56	952	440	429	422
42400		61893	1074	30	32	33	58	75	76	77
42405	BIOSPY OF SALIV	48688	415	8	8	8	117	127	127	127
42408	EXCISION OF SUB	17253	89	-7	-9	-10	194	180	177	175
42409	MARSUPIALIZATIO	6145	34	4	1	0	181	188	183	181
42410	EXCISE PAROTID	524390	1119	11	11	11	469	519	521	521
42415	EXCISE PAROTID	2876386	2842	-11	-12	-12	1012	902	894	887
42420	EXCISE PAROTID	1719042	1439	-9	-9	-8	1195	1091	1091	1095
42425	EXCISION OF PAR	95088	110	24	23	22	864	1072	1060	1051
42426	EXCISE PAROTID	562076	313	-7	-7	-7	1796	1668	1671	1677

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
42440	EXCISION SUBMAX	1626524	2623	-8	-10	-11	620	568	560	554
42450		28048	114	44	45	47	246	353	356	361
42800		78487	1574	4	3	2	50	52	51	51
42802	BIOPSY; HYPOPHA	28051	306	-18	-18	-18	92	75	75	75
42804		69485	935	6	6	6	74	79	79	79
42806	BIOPSY; NASOPHA	107545	1139	4	3	4	94	98	98	98
42808		51791	290	-26	-27	-27	179	132	130	130
42809	REMOVAL OF FORE	23328	360	-40	-41	-42	65	39	38	37
42810		16780	63	-20	-21	-21	266	213	211	210
42815	EXCISION BRANCH	137262	207	-39	-39	-39	663	407	407	406
42820	TONSILLECTOMY;A	5017	24	-4	-6	-8	209	201	195	191
42821		62836	227	-22	-22	-22	277	217	215	215
42825	TONSILLECTOMY	1411	9	24	21	20	157	194	189	188
42826		187336	717	-16	-18	-20	261	220	214	210
42830	ADENOIDECTOMY;P	2548	19	12	12	13	134	150	150	151
42831		8568	54	6	4	4	159	168	165	165
42835	ADENOIDECTOMY;S	315	2	-20	-21	-22	158	127	124	123
42836	ADENOIDECTOMY;S	888	6	18	23	27	148	175	181	188
42842		48509	101	-46	-47	-47	480	260	255	253
42860	EXCISION OF TON	17582	138	-11	-11	-11	127	113	113	113
42870		13832	78	7	8	9	177	190	191	193
42880	EXCISION NASOPH	56966	165	-38	-37	-36	345	216	218	222
42890		126358	191	-14	-15	-15	662	567	564	563
43110	PARTIAL REMOVAL	1099891	546	3	5	7	2014	2078	2121	2152
43120	REMOVE ESOPHAGU	3233410	1542	3	5	5	2097	2167	2195	2209
43130	REMOVAL OF ESOP	990188	1124	12	12	11	881	991	983	974
44100	BIOPSY OF INTES	47370	487	4	4	2	97	102	101	99
44110	EXCISION OF BOW	1484056	2176	-12	-12	-13	682	599	597	592
44111	EXCISION OF BOW	247586	279	-12	-12	-13	887	779	778	775
44120	REMOVAL OF SMAL	20661752	20873	-15	-14	-15	990	846	848	846
44125	REMOVAL OF SMAL	647335	612	-10	-9	-9	1058	954	957	958
44130	BOWEL TO BOWEL	3869386	4525	-8	-7	-8	855	788	791	790
44140	PARTIAL REMOVAL	71371981	57775	-24	-24	-24	1235	937	940	936
44141	PARTIAL REMOVAL	5626067	4336	-23	-23	-24	1298	996	995	991
44143	PARTIAL REMOVAL	17086670	12777	-19	-18	-18	1337	1083	1097	1101
44144	PARTIAL REMOVAL	5990507	4455	-23	-23	-22	1345	1032	1042	1045
44145	PARTIAL REMOVAL	18400649	12481	-24	-24	-25	1474	1117	1119	1113
44146	PARTIAL REMOVAL	2570897	1512	-29	-28	-28	1700	1215	1227	1228
44150	REMOVAL OF COLO	5808319	3504	-28	-28	-28	1658	1193	1199	1199
44155	REMOVAL OF COLO	1282746	718	-25	-25	-25	1787	1335	1342	1343
44160	REMOVAL OF COLO	9218795	6733	-28	-28	-28	1369	991	991	985
44950	APPENDECTOMY	3465133	6611	-32	-32	-33	524	355	354	351
44955	APPENDECTOMY	176267	807	-22	-23	-24	218	170	168	165
44960	APPENDECTOMY	3121555	4637	-35	-36	-36	673	436	433	429
45300	PROCTOSIGMOIDOS	13360019	317956	39	40	41	42	59	59	59
45302		22891	604	176	177	180	38	105	105	106
45303	PROCTOSIGMOIDOS	132959	2760	70	69	67	48	82	81	80
45305	PROCTOSIGMOIDOS	996850	13971	58	58	57	71	113	113	112
45310	PROCTOSIGMOIDOS	635435	6599	56	56	56	96	150	151	150
45315	PROCTOSIGMOIDOS	117950	1110	64	68	70	106	175	179	181

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. R8RVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
45317	CONTROL OF HEMO	67362	604	41	45	48	112	158	161	166
45321	PROCTOSIGMOIDOS	50216	476	82	82	81	122	223	222	221
45330	SIGMOIDOSCOPY	57938201	464166	-11	-11	-12	125	112	111	110
45331	SIGMOIDOSCOPY A	7642808	40861	-16	-16	-17	187	158	156	154
45333	SIGMOIDOSCOPY &	4552332	13289	-34	-35	-36	343	227	224	221
45334	SIGMOIDOSCOPY F	191809	748	20	21	22	256	307	310	314
45336		295893	1149	38	37	37	258	356	353	352
45355	SURGICAL COLONO	739827	9710	-33	-33	-34	76	51	51	50
45360	DIAGNOSTIC COLO	3251111	20554	-44	-45	-47	158	89	87	84
45365	COLONOSCOPY AND	672509	2727	-47	-49	-51	247	129	126	122
45367	SIGMOIDOSCOPY	7580	20	-42	-44	-45	379	218	214	207
45368	COLONOSCOPY,CON	12961	35	-43	-45	-47	370	210	203	197
45369	SIGMOIDOSCOPY	22025	54	-48	-49	-50	408	211	209	205
45370	COLONOSCOPY, LE	501193	1246	-47	-48	-49	402	215	209	204
45372		7555	22	-48	-50	-52	343	178	170	163
45378	DIAGNOSTIC COLO	59510238	146718	-55	-55	-55	406	183	182	181
45379	COLONOSCOPY	192544	444	-50	-50	-50	434	216	217	219
45380	COLONOSCOPY AND	23180209	51838	-55	-56	-56	447	200	198	196
45382	COLONOSCOPY,CON	957509	1730	-59	-59	-58	553	229	230	231
45383	COLONOSCOPY, LE	687386	1404	-49	-49	-49	490	251	250	248
45385	COLONOSCOPY, LE	46493483	74399	-58	-58	-59	625	261	260	258
46000	FISTULOTOMY, SU	141957	1071	34	36	37	133	177	180	182
46040	INCISION OF REC	509672	3935	12	12	11	150	168	167	166
46045	INCISION AND DR	43166	260	20	20	20	166	200	199	198
46050	INCISION AND DR	123137	2051	23	24	23	60	74	74	74
46060	INCISION OF REC	409251	871	-3	-3	-3	470	456	458	456
46080	INCISION OF ANA	267809	1768	35	33	30	151	204	201	197
46083	INCISION OF THR	95695	2183	0	-2	-5	44	44	43	42
47600	REMOVAL OF GALL	33599531	42370	-28	-28	-29	793	569	568	566
47605	REMOVAL OF GALL	59876136	64736	-34	-35	-36	925	608	600	590
47610	REMOVAL OF GALL	27480930	25999	-32	-32	-33	1057	724	720	712
47620	REMOVAL OF GALL	2163974	1649	-35	-36	-36	1312	847	842	834
47630	REMOVE BILE DUC	317220	1021	8	10	11	311	334	341	345
47700	EXPLORATION FOR	176319	262	-15	-16	-17	673	572	568	561
49500	REPAIR INGUINAL	316311	604	-47	-47	-47	524	275	278	278
49505	REPAIR INGUINAL	51322720	93712	-50	-50	-50	548	272	273	271
49510	REPAIR HERNIA,	1509077	2494	-51	-51	-52	605	298	295	292
49515	REPAIR INGUINAL	1393422	2310	-51	-51	-51	603	296	297	296
49520	REREPAIR INGUIN	9594327	14968	-52	-51	-51	641	310	312	312
49525	REPAIR INGUINAL	3015531	4522	-52	-51	-50	667	320	328	331
49530	REPAIR INCARCER	4644586	7640	-48	-48	-48	608	317	318	316
49535	REPAIR STRANGUL	545024	968	-41	-42	-42	564	332	329	325
49540		106470	175	-51	-51	-51	608	297	299	299
49550	REPAIR FEMORAL	2029284	5351	-46	-46	-46	529	285	287	287
49552	REPAIR FEMORAL	316536	565	-41	-40	-39	560	331	337	341
49555	REPAIR FEMORAL	400687	670	-47	-47	-47	598	317	319	319
49560	REPAIR ABDOMINA	16625112	25904	-48	-48	-48	642	335	334	332
49565	REREPAIR ABDOMI	3614237	4915	-49	-49	-49	735	377	376	373
49570	REPAIR EPIGASTR	357943	903	-45	-45	-46	396	219	217	215
49575	REPAIR EPIGASTR	368500	704	-43	-43	-43	523	297	298	297

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
49580	REPAIR UMBILICA	112504	263	-47	-47	-48	428	226	225	224
49581	REPAIR UMBILICA	5037869	11117	-44	-44	-45	453	254	252	250
49590	REPAIR ABDOMINA	312030	546	-50	-50	-50	571	284	285	284
50010	EXPLORATION OF	377207	520	5	5	5	725	763	761	758
50020	DRAINAGE OF KID	274706	523	-3	-2	-2	525	511	513	513
50040	DRAINAGE OF KID	735374	1223	4	6	8	601	628	637	647
50060	REMOVAL OF KIDN	486618	418	-4	-1	1	1164	1119	1154	1179
50075	REMOVAL OF KIDN	215130	145	-10	-9	-7	1484	1338	1358	1374
50080	REMOVAL OF KIDN	1443448	1434	5	5	4	1007	1059	1054	1051
50081	REMOVAL OF KIDN	840840	716	-6	-6	-6	1174	1106	1102	1101
50130	REMOVAL OF KIDN	677559	681	-13	-13	-14	995	870	865	859
50135	EXPLORATION OF	140365	104	-16	-16	-17	1350	1130	1130	1122
50590	FRAGMENTING OF	14539501	15684	-24	-25	-25	927	706	699	694
51500		50954	93	-6	-6	-7	548	515	512	511
51520	CYSTOTOMY FOR E	113691	167	-13	-10	-9	681	595	609	622
51525	REMOVAL OF BLAD	521985	638	8	8	9	818	881	886	888
51530	REMOVAL OF BLAD	299676	388	-9	-7	-5	772	703	718	732
51550	PARTIAL REMOVAL	1235071	1409	-2	-2	-2	877	856	857	857
51555	PARTIAL REMOVAL	615932	583	-6	-5	-4	1056	995	1006	1013
51565	REVISE BLADDER	327881	261	2	3	3	1256	1287	1293	1295
51570	REMOVAL OF BLAD	344188	265	0	2	3	1299	1302	1319	1340
51575	REMOVAL OF BLAD	364724	204	-13	-12	-11	1788	1552	1574	1597
51590	REMOVE BLADDER;	2925165	1373	-11	-11	-11	2130	1893	1897	1893
51595	REMOVE BLADDER;	4763997	1657	-28	-27	-27	2875	2084	2094	2098
51597	REMOVAL OF PELV	1428284	542	-26	-25	-24	2635	1954	1986	2003
51725	SIMPLE CYSTOMET	1699437	31656	74	76	78	54	93	95	96
51726	COMPLEX CYSTOME	4000423	57747	51	52	52	69	105	105	106
51736	URINE FLOW MEAS	468509	20060	77	77	78	23	41	41	41
51741	ELECTRO-UROFLOW	1721619	51628	54	55	56	33	52	52	52
51772		362248	7023	121	127	132	52	114	117	120
51785	ANAL/URINARY MU	1022292	19950	83	84	85	51	94	94	95
51795	VOIDING PRESSUR	128439	2854	107	112	115	45	93	96	97
51797	INTRA-ABDOMINAL	61520	1565	128	130	131	39	90	90	91
52000	CYSTOSCOPY	62188336	573343	16	16	16	108	126	126	126
52005	CYSTOSCOPY & UR	13808961	81687	29	29	28	169	218	217	216
52007	CYSTOSCOPY AND	340263	1596	30	30	30	213	277	277	277
52010		69272	556	62	65	68	125	201	206	210
52204	CYSTOSCOPY	6664409	35285	-8	-8	-9	189	173	173	172
52214	CYSTOSCOPY AND	1527084	7015	-4	-3	-3	218	209	210	211
52224	CYSTOSCOPY AND	2874831	12581	-1	0	1	229	227	229	232
52234	CYSTOSCOPY AND	9273468	24610	22	22	22	377	460	462	461
52235	CYSTOSCOPY AND	13550207	20654	-20	-20	-20	656	524	526	526
52240	CYSTOSCOPY AND	16920072	19396	-19	-18	-17	872	706	716	724
52250	CYSTOSCOPY & RA	287614	1261	-13	-14	-15	228	199	195	194
52260	CYSTOSCOPY & TR	497950	3063	0	-0	-0	163	163	162	162
52265	CYSTOURETHROSCO	217412	2305	-7	-8	-8	94	88	87	86
52270	CYSTOSCOPY & RE	484462	1755	-15	-16	-16	276	234	233	231
52275	CYSTOSCOPY & RE	1490733	5504	-2	-1	0	271	265	268	271
52276	OPTICAL INTERNA	4283457	12251	-7	-8	-9	350	325	321	317
52281	CYSTOSCOPY AND	15635855	84567	-16	-16	-16	185	155	155	156

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
52283		28352	292	64	62	60	97	159	158	155
52285	CYSTOSCOPY AND	1575531	6974	-13	-13	-14	226	196	196	195
52290	CYSTOURETHROSCO	155521	921	6	5	4	169	180	178	176
52300		62866	242	14	13	12	260	296	294	292
52305	CYSTOURETHROSCO	76835	282	30	30	30	272	354	355	355
52310	CYSTOSCOPY AND	2822672	12246	-9	-10	-10	230	210	208	207
52315	CYSTOSCOPY AND	389040	1215	9	9	9	320	350	351	350
52317	REMOVE BLADDER	2414923	5346	3	3	2	452	464	463	462
52318	REMOVE BLADDER	1809029	3120	7	7	7	580	618	619	618
52320	CYSTOSCOPY AND	2160821	5507	-2	-4	-6	392	383	376	370
52325		150017	314	16	14	13	478	554	546	541
52330	CYSTOSCOPY AND	993343	3684	5	4	3	270	283	280	277
52332	CYSTOSCOPY AND	5522453	23310	12	11	9	237	265	262	259
52334	CYSTOURETHROSCO	201187	690	8	8	9	292	315	316	317
52335	ENDOSCOPY OF UR	2534139	5805	-9	-7	-7	437	399	404	408
52336	CYSTOSCOPY, STO	3802270	4894	-1	-3	-5	777	767	752	737
52337	CYSTOSCOPY, STO	717195	1295	70	63	57	554	939	903	871
52338	CYSTOSCOPY AND	451560	993	14	14	14	455	520	520	520
52340	CYSTOSCOPY AND	2028074	5667	5	5	5	358	376	375	374
52500	REVISION OF BLA	5955792	9348	-13	-13	-13	637	556	556	555
52601	PROSTATECTOMY (	265692439	232796	-32	-32	-32	1141	777	774	771
52606	TRANSURETHRAL F	214324	1004	87	87	87	213	400	400	399
52612	PROSTATECTOMY,	876605	912	-20	-18	-16	961	766	788	804
52614	PROSTATECTOMY,	381544	653	-12	-13	-12	584	511	511	512
52620	REMOVE RESIDUAL	574900	1454	11	10	10	395	439	437	433
52630	REMOVE PROSTATE	3766463	3580	-34	-34	-35	1052	698	696	689
52640	RELIEVE BLADDER	2017072	3455	-29	-30	-31	584	413	407	400
52650	PROSTATECTOMY	93813	106	-31	-32	-32	885	614	601	600
54300	PLASTIC OPERATI	17936	84	53	53	53	214	327	327	327
54304	PLASTIC OPERATI	20816	31	-17	-15	-14	671	555	569	575
54322		7614	10	-18	-17	-16	761	627	635	641
54332		1155	1	-43	-48	-52	1155	663	606	560
54400	REVISION OF PEN	2948689	2664	-40	-39	-39	1107	663	671	676
54402	REMOVAL OF PENI	137881	306	-6	-6	-6	451	421	423	425
54405	PENIS PLASTIC S	7809477	4477	-41	-41	-40	1744	1036	1037	1038
54407	REMOVAL/REPAIR	536955	769	-27	-27	-27	698	509	508	509
54409	SUGICAL CORRECT	159151	236	-29	-29	-30	674	482	477	474
55250	VASECTOMY	97698	521	34	34	33	188	251	251	249
57450		36674	485	10	14	17	76	83	86	88
57451	CULDOSCOPY WITH	23371	249	79	74	69	94	168	163	158
57452	EXAMINATION OF	534348	11360	41	42	43	47	66	67	67
57454	VAGINA EXAMINAT	892933	9531	10	8	8	94	103	102	101
58100	BIOPSY OF UTERU	992999	18681	-32	-33	-33	53	36	36	35
58101		40027	1354	4	3	2	30	31	30	30
58102	CURETTAGE OF UT	478168	6126	-36	-38	-38	78	50	49	48
58103	MENSTRUAL EXTRA	5176	64	-24	-24	-24	81	62	61	62
58120	DILATION AND CU	13237802	50147	-39	-39	-39	264	162	162	162
58140	REMOVAL OF UTER	218912	391	-4	-4	-3	560	538	539	541
58145		57105	94	-35	-34	-33	608	397	402	410
58150	TOTAL HYSTERECT	27870937	28127	-45	-46	-46	991	541	535	532

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
58152	TOTAL HYSTERECT	1201866	1000	-47	-48	-49	1202	635	620	609
58180	PARTIAL HYSTERE	386029	452	-33	-33	-32	854	569	573	578
58200	EXTENSIVE HYSTE	1728026	1401	-48	-49	-49	1233	640	635	634
58205	EXTENSIVE HYSTE	140688	89	-43	-44	-44	1581	896	887	891
58260	VAGINAL HYSTERE	3711024	3809	-50	-51	-51	974	483	479	477
58265	HYSTERECTOMY &	13973247	13357	-46	-47	-48	1046	560	551	545
58267	HYSTERECTOMY &	330873	287	-53	-53	-54	1153	542	537	536
58270	HYSTERECTOMY &	1000409	944	-47	-47	-47	1060	565	560	558
58275	VAGINAL HYSTERC	74552	69	-46	-46	-46	1080	578	581	587
58280	REPAIR OF ENTER	161415	146	-47	-47	-46	1106	582	586	599
58285		46411	35	-52	-52	-51	1326	639	638	646
58900	BIOSPY OF OVARY	67285	159	-30	-29	-28	423	297	300	304
58920		87154	156	-41	-41	-40	559	331	332	334
58925	REMOVAL OF OVAR	471581	875	-31	-31	-32	539	373	370	366
58940	REMOVAL OF OVAR	1673875	3330	-35	-35	-36	503	327	325	322
58945	REMOVE OVARY(S)	37993	61	-27	-26	-24	623	458	460	471
58980	LAPAROSCOPY OF	1055513	2795	-41	-41	-42	378	223	221	220
58982	LAPAROSCOPY;PEL	149172	292	-56	-57	-57	511	223	222	221
58983	LAPAROSCOPY WIT	47157	90	-57	-58	-58	524	224	221	219
58984		27412	69	-30	-30	-30	397	277	277	277
58985	LAPAROSCOPY WIT	215360	539	-30	-30	-31	400	280	278	277
58986		129508	329	-35	-36	-36	394	254	252	252
58987	LAPAROSCOPY WIT	69259	172	-35	-35	-35	403	263	262	263
58990	HYSTEROSCOPY; D	306825	1999	-17	-17	-16	153	127	127	128
59000	AMNIOCENTESIS F	14186	196	140	138	137	72	173	172	172
59020		7292	128	3	1	1	57	59	58	57
59025	FETAL NON-STRES	23584	627	20	18	16	38	45	44	44
59050	INITIATION/SUPE	2807	54	46	47	48	52	76	76	77
59100	HYSTEROTOMY FOR	2809	11	174	175	176	255	699	702	705
59105		1124	4	23	30	37	281	344	366	386
59500	CESAREAN SECTIO	252445	334	-46	-47	-48	756	407	399	396
59501	CESAREAN SECTIO	397426	418	-41	-42	-42	951	563	554	548
59520	CESAREAN SECTIO	33683	52	-38	-38	-38	648	402	402	400
59540		893	1	-57	-60	-64	893	385	359	320
59800	TREAT SPONTANEO	2268	17	5	11	14	133	140	148	152
59801		38781	140	-30	-31	-30	277	193	192	193
59810		2244	9	-11	-9	-10	249	222	226	225
59811	TREAT SPONTANEO	5171	15	-40	-40	-40	345	207	207	207
59820		20804	77	-25	-27	-27	270	201	199	198
59830	TREAT SEPTIC AB	207	1	4	10	18	207	215	227	245
59840	LEGAL ABORTION,	47240	177	-31	-29	-27	267	185	190	195
59841		14920	48	-37	-34	-32	311	196	205	213
59850	TREAT LEGAL ABO	5939	16	-45	-43	-42	371	204	211	216
59851	DILATION AND CU	17072	50	-39	-35	-31	341	207	221	237
59852		2095	5	-45	-40	-38	419	232	253	262
61526	CRANIECTOMY FOR	139613	55	-34	-33	-33	2538	1688	1693	1712
62270	SPINAL FLUID TA	1218624	23921	24	22	19	51	63	62	61
62272	SPINAL PUNCTURE	32154	502	19	17	14	64	76	75	73
62273	INJECTION LUMBA	25709	219	9	14	19	117	128	134	140
62274	INJECT SPINAL A	109370	2134	50	49	48	51	77	76	76

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
62276	INJECTION, SUBA	4357	49	25	22	20	89	111	108	106
62277	INJECTION, SUBA	1683	21	-2	-0	-2	80	79	80	78
62278	INJECT SPINAL A	542955	5501	26	24	23	99	124	123	122
62279	INJECT SPINAL A	51663	625	66	60	55	83	137	132	128
62280	INJECTION, OF N	30784	535	88	84	83	58	108	106	105
62282	TREAT SPINAL CA	79802	570	22	23	23	140	170	172	173
62284	INJECTION FOR M	3003976	17632	10	12	14	170	187	191	195
62288	INJECTION INTO	123934	986	-10	-8	-6	126	113	115	118
62289	INJECTION INTO	582745	4363	-3	1	2	134	130	134	136
62290	PROCEDURE FOR D	101221	557	24	24	24	182	226	225	225
62291		13323	101	34	37	42	132	176	181	187
62292	INJECTION INTO	152677	151	12	13	13	1011	1130	1138	1144
62295	EXPLORATION OF	3025	3	45	37	33	1008	1461	1379	1342
62296	EXPLORATION OF	1638	1	-17	-15	-14	1638	1365	1398	1405
62297	EXPLORE LOW BAC	122014	89	-17	-16	-17	1371	1133	1149	1141
62301	EXPLORATION OF	6114	4	-1	0	3	1529	1509	1529	1575
62303	EXPLORE LOW BAC	29390	29	43	44	46	1013	1449	1464	1483
63001	RELIEVE SPINAL	180674	114	-20	-18	-17	1585	1274	1299	1321
63003	RELIEVE SPINAL	77103	49	-15	-11	-9	1574	1345	1393	1434
63005	RELIEVE SPINAL	4354864	2921	-19	-20	-21	1491	1204	1191	1183
63010	RELIEVE SPINAL	537137	391	-12	-12	-12	1374	1210	1208	1207
63015	RELIEVE SPINAL	167890	91	-22	-20	-20	1845	1442	1468	1485
63016	RELIEVE SPINAL	65950	36	-16	-15	-14	1832	1539	1560	1571
63017	RELIEVE SPINAL	4907685	2537	-26	-25	-25	1934	1439	1442	1443
63020	NECK SPINE DISK	279638	210	-14	-16	-18	1332	1146	1112	1087
63021	NECK SPINE DISK	58583	33	-26	-23	-22	1775	1315	1364	1390
63030	LOW BACK DISK S	3958111	3102	-13	-14	-15	1276	1112	1094	1081
63031	LOW BACK DISK S	4021125	2451	-23	-23	-23	1641	1271	1270	1265
63035	ADDED SPINAL DI	937760	2632	26	25	25	356	448	447	444
63040	NECK SPINE DISK	213333	117	-26	-25	-24	1823	1348	1364	1378
63041	LAMINOTOMY, LUM	13316	8	-10	-14	-17	1665	1501	1428	1383
63042	LOW BACK DISK S	3764907	2119	-23	-23	-23	1777	1371	1368	1367
63060		9358	7	-8	-9	-10	1337	1223	1216	1204
63076	DISKECTOMY,CERV	16047	33	77	78	79	486	859	865	872
64702	NEUROLYSIS, DIG	101921	307	-45	-44	-43	332	182	187	190
64704	NEUROLYSIS, HAN	135124	322	-54	-52	-52	420	194	200	202
64708	NEUROPLASTY, MA	281131	562	-44	-43	-43	500	282	284	286
64718	REVISE ULNAR NE	1146466	1948	-46	-46	-47	589	319	316	313
64719	REVISE ULNAR NE	446087	1279	-39	-39	-40	349	212	211	211
64721	REVISE MEDIAN N	16736613	34771	-54	-54	-55	481	222	220	219
64722	RELIEVE PRESSUR	273861	633	-44	-44	-45	433	242	241	239
64727	INTERNAL NERVE	358768	1526	-23	-23	-23	235	181	181	180
65800	PARACENTESIS OF	112933	816	51	52	52	138	209	210	211
65805	PARACENTESIS WI	67563	587	98	99	100	115	228	229	230
65815		100746	331	10	12	13	304	335	340	344
65850	INCISION OF EYE	5899353	5260	-36	-30	-27	1122	720	782	818
65855	LASER SURGERY O	67854336	80054	-42	-41	-40	848	494	501	505
66850	REMOVAL OF LENS	3974331	3979	-5	-7	-8	999	950	931	920
66920	EXTRACTION OF L	4414361	4488	-18	-17	-16	984	807	819	826
66940	EXTRACTION OF L	6309328	6210	-6	-6	-6	1016	955	957	958

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
66983	REMOVE CATARACT	105630230	62899	-35	-34	-33	1679	1095	1111	1122
66984	REMOVE CATARACT	1369817716	837691	-32	-33	-33	1635	1110	1098	1093
66985	INSERT LENS PRO	38058665	36413	-26	-25	-25	1045	778	779	780
67105	REPAIR, DETACHE	3709411	3953	-41	-41	-41	938	553	552	553
67107	REPAIR DETACHED	23306127	13963	-23	-23	-22	1669	1285	1293	1299
67108	REPAIR DETACHED	9181232	3400	-31	-31	-31	2700	1874	1867	1869
67120	REMOVE EYE IMPL	341602	663	-11	-10	-9	515	459	464	466
67208	TREATMENT OF RE	1577911	1904	-35	-33	-31	829	538	557	568
67210	TREATMENT OF RE	30048632	39770	-36	-36	-35	756	482	487	489
67218	TREATMENT OF RE	268130	287	-26	-25	-24	934	692	703	710
67228	TREATMENT OF RE	80245087	103950	-37	-36	-35	772	484	492	498
67311	REVISE EYE MUSC	563507	867	-4	-5	-5	650	624	621	620
67312	REVISE TWO EYE	1019460	1297	-14	-14	-14	786	678	674	673
67313	STRABISMUS SURG	353172	407	-9	-10	-10	868	786	784	785
67320	TRANSPOSITION O	77387	83	-13	-11	-10	932	811	828	841
67331		51457	70	-5	-5	-5	735	695	698	701
67332	STRABISMUS/REOP	95079	116	1	2	2	820	832	837	840
67800	REMOVE EYELID L	2155944	30531	26	26	26	71	89	89	89
67801	REMOVE EYELID L	636345	5813	21	27	31	109	133	139	143
67805		155018	1389	29	34	37	112	144	149	153
67808	EXCISION OF CHA	56270	374	38	40	41	150	207	211	212
67810		271378	4610	59	60	60	59	94	94	94
67820	REVISE EYELASHE	1119129	39446	43	47	49	28	41	42	42
67825	REVISE EYELASHE	554070	9262	67	70	71	60	100	101	102
67830	INCISION OF LID	87691	381	14	13	12	230	262	259	258
67840	REMOVE EYELID L	1658574	19023	326	326	326	87	372	371	372
67850	DESTRUCTION OF	122909	1809	379	389	395	68	326	332	336
69200	CLEAR OUTER EAR	414336	15711	84	88	94	26	49	50	51
69210	REMOVE IMPACTED	5403489	356531	58	57	53	15	24	24	23
69220	DEBRIDEMENT MAS	242425	6251	67	71	75	39	65	66	68
69221	DEBRIDEMENT MAS	46696	1381	66	68	69	34	56	57	57
69222		65444	967	160	167	172	68	176	181	184
69223	DEBRIDEMENT MAS	19623	229	76	78	80	86	151	152	154
69420	INCISION OF EAR	577887	11687	42	42	43	49	70	70	71
69424	VENILATING TUBE	15696	327	24	23	23	48	60	59	59
69425		12012	158	43	43	44	76	109	109	109
69433	CREATE EARDRUM	1445914	15898	-19	-21	-22	91	73	72	71
69434	CREATE EARDRUM	452073	3478	-4	-6	-8	130	125	122	119
69436	CREATE EARDRUM	453505	3419	-9	-11	-12	133	121	118	117
69437	CREATE EARDRUM	627077	3130	-24	-25	-26	200	153	150	147
69440	EXPLORATION OF	358967	614	-24	-24	-24	585	446	443	443
69601	REVISION MASTOI	77730	70	-27	-28	-29	1110	809	798	790
69604	REVISION MASTOI	109448	68	-39	-39	-38	1610	984	985	1000
69610		104102	1471	-31	-30	-28	71	48	50	51
69611	TYMPANIC MEMBRA	44667	698	11	11	11	64	71	71	71
69620	REPAIR OF EARDR	208650	290	-28	-28	-28	719	521	518	517
69631	REPAIR EARDRUM	2977092	2408	-32	-33	-34	1236	840	825	816
69632	REBUILD EARDRUM	1074524	778	-30	-30	-30	1381	971	966	969
69633	TYMPANOPLASTY W	276179	210	-27	-29	-31	1315	955	928	911
69635	REPAIR EARDRUM	565866	402	-31	-32	-32	1408	975	961	953

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
69636	REBUILD EARDRUM	294853	196	-28	-29	-29	1504	1080	1071	1068
69637	TYMPANOPLASTY W	75151	43	-39	-39	-39	1748	1073	1062	1066
69641	REVISE MIDDLE E	1309080	893	-29	-30	-31	1466	1042	1023	1011
69642	REVISE MIDDLE E	619846	391	-29	-30	-31	1585	1132	1108	1091
69643	REVISE MIDDLE E	377062	228	-29	-29	-29	1654	1166	1167	1175
69644	REVISE MIDDLE E	441826	240	-30	-31	-31	1841	1282	1269	1265
69645	TYMPANOPLASTY W	193378	128	-23	-24	-24	1511	1162	1153	1149
69646	TYMPANOPLASTY W	209601	122	-30	-31	-32	1718	1204	1184	1175
69660	REVISE MIDDLE E	2025943	1605	-25	-26	-27	1262	944	929	920
69661	STAPEDECTOMY WI	155157	116	-26	-25	-23	1338	996	1007	1024
69667	STAPEDECTOMY, R	89030	90	-14	-15	-15	989	853	840	838
69930	COCHLEAR DEVICE	108946	53	-45	-46	-45	2056	1122	1119	1126
70030		8703	269	3	4	2	32	33	34	33
70040	RADIOLOGIC EXAM	448	13	-37	-39	-40	34	22	21	21
70100		52349	1535	-44	-44	-44	34	19	19	19
70110	X-RAY EXAM OF J	147911	3069	-58	-57	-57	48	20	21	21
70120	RADIOLOGIC EXAM	98037	2633	-45	-45	-44	37	21	21	21
70130	X-RAY EXAM OF M	305099	4851	-48	-47	-45	63	33	34	34
70134	X-RAY EXAM OF M	175675	3020	-40	-40	-40	58	35	35	35
70140		60631	1837	-50	-50	-51	33	16	16	16
70150	X-RAY EXAM OF F	239512	5066	-59	-58	-58	47	19	20	20
70160	X-RAY EXAM OF N	178775	5566	-56	-55	-55	32	14	14	15
70170	DACRYOCYSTOGRAP	5546	129	8	12	15	43	46	48	49
70171	DACRYOCYSTOGRAP	6322	87	-30	-25	-22	73	51	55	57
70190	RADIOLOGIC EXAM	7750	218	-56	-55	-54	36	16	16	16
70200	X-RAY EXAM OF E	105638	2508	-60	-59	-58	42	17	17	18
70210	X-RAY EXAM OF S	2051400	82948	-33	-35	-37	25	16	16	16
70220	X-RAY EXAM OF S	9608008	288576	-37	-37	-37	33	21	21	21
70240	RADIOLOGIC EMAM	36629	1083	-55	-55	-55	34	15	15	15
70250	X-RAY EXAM OF S	1823213	82749	-29	-29	-29	22	16	16	16
70260	X-RAY EXAM OF S	6083879	219815	-29	-29	-29	28	20	20	20
70300		906	90	113	108	103	10	21	21	20
70310	RADIOLOGIC PART	1286	76	21	22	23	17	21	21	21
70320	RADIOLOGIC PART	5456	176	-4	-5	-7	31	30	29	29
70328	RADIOLOGIC TEMP	45491	931	-14	-10	-6	49	42	44	46
70330	RADIOLOGIC EXAM	138436	2624	-21	-20	-20	53	42	42	42
70332	TEMPOROMANDIBUL	6054	85	-25	-24	-23	71	53	54	55
70333		8048	65	6	6	7	124	131	132	132
70350	CEPHALOGRAM, OR	6929	204	-29	-26	-24	34	24	25	26
70355		87208	4393	-12	-12	-13	20	18	17	17
70360	X-RAY EXAM OF N	154092	5178	-24	-23	-22	30	22	23	23
70370	RADIOLOGIC EXAM	10552	294	-17	-17	-16	36	30	30	30
70380	RADIOLOGIC EXAM	35670	878	7	9	10	41	44	44	45
70390	X-RAY EXAM OF S	10607	200	-1	2	6	53	52	54	56
70391	X-RAY EXAM OF S	40127	490	-48	-47	-47	82	43	43	43
70450	CAT SCAN OF HEA	78709603	798757	-33	-32	-32	99	66	67	67
70460	CONTRAST CAT SC	26239110	223426	-37	-37	-37	117	74	74	74
70470	CONTRAST CAT SC	85160230	654193	-36	-37	-38	130	83	82	81
70480	CAT SCAN OF SKU	2294947	20598	-41	-40	-39	111	66	67	68
70481	CONTRAST CAT SC	2505164	19838	-40	-40	-40	126	76	76	76

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OM GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OM GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
70486	CAT SCAN OF FAC	1208023	9081	-59	-59	-59	133	54	55	55
71010	X-RAY EXAM OF C	23162004	919401	-58	-58	-58	25	11	11	11
71015	STEREO X-RAY EX	256342	7570	-58	-58	-59	34	14	14	14
71020	X-RAY EXAM OF C	265938307	12666836	-23	-23	-24	21	16	16	16
71021	X-RAY EXAM OF C	629656	41383	-10	-6	-3	15	14	14	15
71022	X-RAY EXAM OF C	422099	16592	-36	-34	-33	25	16	17	17
71023	RADIOLOGIC EXAM	35578	967	-50	-48	-46	37	19	19	20
71030	X-RAY EXAM OF C	2326720	94958	-23	-21	-20	25	19	19	20
71034	CHEST X-RAY & F	91806	2445	-41	-40	-40	38	22	22	23
71035	X-RAY EXAM OF C	149622	5170	-44	-43	-42	29	16	17	17
71036	X-RAY GUIDANCE	21708	320	-29	-29	-28	68	48	48	49
71038	FLUOROSCOPY LOC	8936	135	-40	-39	-39	66	40	40	41
71040	BRONCHOGRAPHY U	12120	350	-30	-29	-28	35	24	25	25
71041	BRONCHOGRAPHY C	9142	179	-34	-39	-41	51	34	31	30
71060		6375	219	-42	-41	-39	29	17	17	18
71061		1408	13	-79	-79	-79	108	23	23	23
71090	X-RAY & PACEMAK	3145	68	-32	-29	-28	46	32	33	33
71100	X-RAY EXAM OF R	6042509	261189	-30	-30	-30	23	16	16	16
71101	X-RAY EXAM OF R	2178442	90202	-29	-29	-29	24	17	17	17
71110	X-RAY EXAM OF R	1487529	51679	-30	-30	-30	29	20	20	20
71111	X-RAY EXAM OF R	581283	19332	-29	-29	-29	30	21	21	21
71120	X-RAY EXAM OF B	157956	4398	-39	-39	-38	36	22	22	22
71130	X-RAY EXAM OF B	40557	1005	-9	-8	-7	40	37	37	38
71250	CAT SCAN OF CHE	15718289	127839	-35	-34	-34	123	80	81	81
71260	CONTRAST CAT SC	23129047	172993	-37	-37	-37	134	84	84	84
71270	CONTRAST CAT SC	5340892	36778	-35	-35	-35	145	94	94	94
72010	X-RAY EXAM OF S	1025961	20655	-27	-26	-25	50	36	37	37
72020	X-RAY EXAM OF S	1159614	71101	-18	-19	-20	16	13	13	13
72040	X-RAY EXAM OF N	5336510	195119	-34	-34	-34	27	18	18	18
72050	X-RAY EXAM OF N	10949645	316646	-34	-34	-34	35	23	23	23
72052	X-RAY EXAM OF N	7271331	179900	-35	-35	-35	40	26	26	26
72070	X-RAY EXAM OF T	7785918	302714	-30	-30	-30	26	18	18	18
72072	X-RAY EXAM OF T	1352041	56070	-29	-30	-31	24	17	17	17
72074	X-RAY EXAM OF T	568163	18754	-34	-34	-33	30	20	20	20
72080	X-RAY EXAM OF T	978618	31460	-33	-33	-33	31	21	21	21
72090	X-RAY EXAM OF T	149638	3483	-40	-40	-40	43	26	26	26
72100	X-RAY EXAM OF L	19582411	620634	-32	-32	-33	32	22	21	21
72110	X-RAY EXAM OF L	33105976	793596	-33	-33	-32	42	28	28	28
72114	X-RAY EXAM OF L	1477514	33500	-30	-30	-30	44	31	31	31
72120	X-RAY EXAM OF L	503993	14064	-17	-17	-18	36	30	30	30
72125	CAT SCAN OF NEC	4677467	34991	-38	-38	-38	134	83	83	84
72126	CONTRAST CAT SC	1357965	9643	-35	-35	-36	141	92	91	91
72127	COMPUTERIZED AX	149633	838	-52	-51	-50	179	87	88	89
72128	CAT SCAN OF THO	1645444	13699	-33	-33	-33	120	80	80	80
72131	CAT SCAN OF LOW	26239661	189198	-39	-39	-39	139	85	85	85
72140	MAGNETIC IMAGE	481068	825	-76	-77	-77	583	138	135	134
72170	X-RAY EXAM OF P	13349424	668835	-24	-24	-25	20	15	15	15
72180	STEREO X-RAY EX	798820	34934	-29	-30	-31	23	16	16	16
72190	X-RAY EXAM OF P	3047314	113238	-28	-27	-26	27	19	20	20
72192	CAT SCAN OF PEL	8542437	80819	-32	-32	-32	106	72	72	72

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
72193	CONTRAST CAT SC	18768829	154217	-35	-35	-35	122	79	79	80
72194	CONTRAST CAT SC	3734660	27637	-31	-31	-31	135	93	93	93
72200	RADIOLOGIC EXAM	148125	6132	-18	-18	-17	24	20	20	20
72202	X-RAY EXAM SACR	301334	11324	-27	-26	-26	27	19	20	20
72220	X-RAY EXAM OF T	1115126	51200	-28	-28	-28	22	16	16	16
72240	CONTRAST X-RAY	11517	177	-27	-27	-28	65	47	47	47
72255		1876	36	9	15	17	52	57	60	61
72265	CONTRAST X-RAY	30668	416	-29	-28	-28	74	52	53	53
72266	CONTRAST X-RAY	193954	837	-28	-30	-30	232	166	163	162
72270	CONTRAST X-RAY	15138	211	-1	1	2	72	71	72	73
72271	CONTRAST X-RAY	48409	157	-39	-39	-40	308	188	187	186
72285	DISKOGRAPHY, CE	3413	47	-17	-17	-16	73	60	60	61
72295		6264	148	-4	8	16	42	41	46	49
73000	X-RAY EXAM OF C	853636	44594	13	13	12	19	22	22	21
73010	X-RAY EXAM OF S	230872	6826	-33	-32	-32	34	23	23	23
73020	X-RAY EXAM OF S	2624588	111767	-0	-0	-1	23	23	23	23
73030	X-RAY EXAM OF S	17431008	697143	2	2	2	25	26	26	26
73040	RADIOLOGIC EXAM	102745	2183	-10	-10	-9	47	42	43	43
73041	CONTRAST X-RAY	457013	4509	-12	-11	-11	101	89	90	90
73050	RADIOLOGIC EXAM	177173	6913	-7	-7	-7	26	24	24	24
73060	X-RAY EXAM OF H	3850712	188349	5	5	4	20	21	21	21
73070	X-RAY EXAM OF E	2302586	105810	9	8	7	22	24	24	23
73080	X-RAY EXAM OF E	2532514	124042	4	5	6	20	21	22	22
73090	X-RAY EXAM OF F	1890453	107330	63	62	61	18	29	28	28
73092	RADIOLOGIC EXAM	2472	79	-0	-1	-3	31	31	31	30
73100	X-RAY EXAM OF W	6024976	253822	73	71	70	24	41	41	40
73110	X-RAY EXAM OF W	8479807	384923	56	57	57	22	34	35	35
73115	RADIOLOGIC EXAM	14185	493	30	27	25	29	37	37	36
73116	RADIOLOGIC EXAM	28483	744	20	22	24	38	46	47	47
73120	X-RAY EXAM OF H	3061367	143827	-24	-24	-24	21	16	16	16
73130	X-RAY EXAM OF H	5496026	255571	-27	-26	-26	22	16	16	16
73140	X-RAY EXAM OF F	2444562	144478	-21	-21	-22	17	13	13	13
73500	X-RAY EXAM OF H	5996122	287273	-18	-19	-19	21	17	17	17
73510	X-RAY EXAM OF H	33644074	1280206	-17	-17	-17	26	22	22	22
73520	X-RAY EXAM OF H	6676418	208422	-15	-15	-15	32	27	27	27
73525	RADIOLOGIC EXAM	25760	561	-40	-41	-42	46	28	27	27
73526		52187	596	-34	-34	-34	88	58	58	58
73530	X-RAY EXAM OF H	30455	848	-45	-45	-45	36	20	20	20
73540	X-RAY EXAM OF P	235940	8632	-24	-25	-26	27	21	20	20
73550	X-RAY EXAM OF T	6191387	306536	-18	-19	-19	20	16	16	16
73560	X-RAY EXAM OF K	20019312	842326	-24	-25	-26	24	18	18	18
73562	X-RAY EXAM OF K	10075283	390957	-31	-31	-31	26	18	18	18
73564	X-RAY EXAM OF K	10274911	321339	-23	-22	-22	32	25	25	25
73580	CONTRAST X-RAY	144313	2680	-46	-46	-45	54	29	29	29
73581	CONTRAST X-RAY	477065	4407	-50	-50	-49	108	54	55	55
73590	X-RAY EXAM OF L	4993471	262821	-25	-25	-25	19	14	14	14
73592	RADIOLOGIC EXAM	8450	287	-51	-51	-51	29	14	15	14
73600	X-RAY EXAM OF A	3341246	146925	-23	-23	-24	23	18	17	17
73610	X-RAY EXAM OF A	9569454	431507	-27	-27	-27	22	16	16	16
73615		30196	1202	-40	-41	-41	25	15	15	15

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
73616	RADIOLOGIC EXAM	19890	441	-56	-56	-56	45	20	20	20
73620	X-RAY EXAM OF F	4545681	203287	26	25	25	22	28	28	28
73630	X-RAY EXAM OF F	10529259	488123	20	20	20	22	26	26	26
73650	X-RAY EXAM OF H	1155180	53222	17	16	16	22	25	25	25
73660	X-RAY EXAM OF T	956499	57168	17	17	16	17	20	20	19
74000	X-RAY EXAM OF A	5201291	186486	-39	-39	-38	28	17	17	17
74010	X-RAY EXAM OF A	985070	27047	-47	-48	-48	36	19	19	19
74020	X-RAY EXAM OF A	16547748	824580	5	4	4	20	21	21	21
74022	X-RAY EXAM SERI	428937	9296	-42	-42	-43	46	27	27	26
74150	CAT SCAN OF ABD	23996133	208541	-35	-35	-35	115	75	75	75
74160	CONTRAST CAT SC	60922111	465793	-37	-37	-37	131	83	82	82
74170	CONTRAST CAT SC	38061884	252863	-36	-37	-37	151	96	95	94
74210	CONTRAST XRAY E	314092	5572	-56	-54	-53	56	25	26	26
74220	CONTRAST XRAY E	2789262	49392	-56	-56	-56	56	25	25	25
74230	CINEMA XRAY THR	232926	3432	-65	-64	-64	68	24	24	24
74235	REMOVAL OF FORE	2980	41	-70	-70	-71	73	22	22	21
74240	X-RAY EXAM UPPE	9866664	119536	-58	-59	-59	83	34	34	34
74241	X-RAY EXAM UPPE	7999203	82474	-56	-54	-53	97	43	44	45
74245	X-RAY EXAM UPPE	2982132	25808	-62	-61	-61	116	43	45	45
74246	CONTRAST XRAY U	3913349	39686	-59	-59	-59	99	41	40	40
74247	CONTRAST XRAY U	3618024	30651	-55	-54	-54	118	53	54	54
74249	CONTRAST XRAY U	728907	5347	-63	-62	-61	136	50	52	53
74250	X-RAY EXAM OF S	829633	11812	-47	-46	-45	70	37	38	39
74260	X-RAY EXAM OF S	30674	402	-54	-50	-47	76	35	38	40
74270	CONTRAST X-RAY	14106364	175817	-27	-27	-27	80	59	59	59
74280	CONTRAST X-RAY	13021073	125379	-24	-23	-22	104	79	80	81
74400	CONTRAST X-RAY	9174191	104942	-37	-37	-37	87	55	55	55
74405	CONTRAST X-RAY	1241243	11536	-44	-44	-43	108	60	61	62
74420	CONTRAST X-RAY	274382	5387	-41	-43	-45	51	30	29	28
74425	CONTRAST X-RAY	39855	1135	2	-1	-4	35	36	35	34
74426	CONTRAST X-RAY	103233	1394	-6	-8	-10	74	70	68	67
74430	CONTRAST X-RAY	114770	2302	-41	-40	-39	50	29	30	30
74431	CONTRAST X-RAY	231942	3494	-33	-33	-33	66	45	45	45
74440	VESICULOGRAPH D	3627	77	31	38	42	47	62	65	67
74450	X-RAY EXAM URET	43167	971	-26	-27	-27	44	33	32	32
74451		86456	1277	-22	-23	-25	68	53	52	51
74455	X-RAY EXAM URET	126614	1939	-34	-35	-35	65	43	42	42
74456	X-RAY EXAM URET	223820	2791	-35	-36	-36	80	52	52	51
74470	RADIOLOGIC EXAM	2309	64	5	7	10	36	38	39	40
74471	RADIOLOGIC EXAM	2660	20	29	33	35	133	172	177	180
74475	INTRO OF INTRAC	10433	226	95	123	144	46	90	103	112
74476	XRAY CONTROL CA	15221	70	6	7	6	217	231	233	231
74480		3887	55	80	88	95	71	127	133	138
74481	XRAY CONTROL CA	9011	30	-7	-8	-10	300	279	276	271
74710		4262	151	84	84	82	28	52	52	51
74720	RADIOLGIC EXAMI	2720	77	36	35	33	35	48	48	47
74741	HYSTEROSALPINGO	4771	44	-30	-27	-25	108	76	79	81
75650	ARTERY X-RAYS,	9949	144	94	106	113	69	134	142	147
75651	ARTERY X-RAYS,	258168	472	-42	-43	-44	547	318	309	306
75652	ARTERY X-RAYS,	2149	16	-14	-13	-13	134	116	117	117

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
75653	ARTERY X-RAYS,	22280	66	-24	-25	-27	338	258	252	247
75654	ARTERY X-RAYS,	10820	67	4	4	3	162	168	168	166
75655	ARTERY X-RAYS,	108226	195	-28	-27	-26	555	401	403	408
75656	ARTERY X-RAYS,	20720	140	59	55	52	148	235	230	225
75657	ARTERY X-RAYS,	153883	359	-3	-1	-0	429	416	425	428
75658	ANGIOGRAPHY; BR	1514	12	-2	-2	-1	126	123	124	125
75659	X-RAY EXAM OF A	3532	23	67	83	94	154	257	282	298
75660	ARTERY X-RAYS,	41624	239	-39	-36	-33	174	106	112	116
75661	ARTERY X-RAYS,	34151	145	9	21	31	236	257	286	308
75662	ARTERY X-RAYS,	9210	202	170	180	193	46	123	128	134
75663	ARTERY X-RAYS,	40056	140	30	27	27	286	373	364	364
75665	ARTERY X-RAYS,	4515	54	30	30	31	84	109	109	110
75667	ARTERY X-RAYS,	477	2	5	-1	-3	239	251	237	231
75669	ARTERY X-RAYS,	18664	47	-32	-31	-30	397	271	274	278
75671	ARTERY X-RAYS,	25642	162	-9	-4	-1	158	145	152	157
75672	ARTERY X-RAYS,	113454	349	-14	-16	-15	325	279	273	277
75673	ARTERY X-RAYS,	190270	358	-24	-24	-24	531	406	405	406
75676		2140	21	64	62	60	102	167	165	163
75677	ANGIOGRAPHY; VE	995	6	4	3	3	166	173	171	171
75678	ARTERY X-RAYS,	21587	54	-25	-26	-26	400	298	298	295
75680	ARTERY X-RAYS,	33450	129	-47	-48	-50	259	137	134	129
75681	ARTERY X-RAYS,	3809	12	-5	-7	-8	317	303	295	294
75682	ARTERY X-RAYS,	264643	487	-28	-29	-29	543	389	386	388
75685		1855	25	68	63	58	74	125	121	117
75687	ARTERY X-RAYS,	11081	54	38	41	42	205	283	289	291
75690		2155	27	108	99	87	80	166	159	150
75692	ARTERY X-RAYS,	1725	8	6	4	2	216	228	225	221
75695		6588	35	-28	-24	-19	188	136	143	152
75697	ARTERY X-RAYS,	8967	30	12	9	9	299	334	324	325
75705		2389	23	-33	-33	-33	104	69	70	69
75710	ARTERY X-RAYS,	20775	235	-6	-3	-3	88	83	85	86
75711	ARTERY X-RAYS,	27376	136	8	16	20	201	218	234	243
75712	ARTERY X-RAYS,	96780	294	-25	-24	-24	329	245	249	251
75716	ARTERY X-RAYS,	16874	170	37	35	33	99	136	134	132
75717	ARTERY X-RAYS,	4047	18	31	31	32	225	294	296	296
75718	ARTERY X-RAYS,	130077	423	1	9	15	308	312	337	354
75722	ANGIOGRAPHY; UN	4487	41	28	32	33	109	140	144	146
75723	ARTERY X-RAYS,	19813	59	-1	-3	-5	336	333	325	318
75724	ANGIOGRAPHY; BI	2059	21	38	40	40	98	135	137	137
75725	ARTERY X-RAYS,	28587	75	-0	-2	-3	381	381	374	368
75726	ARTERY X-RAYS,	4435	50	48	62	69	89	131	143	150
75727	ARTERY X-RAYS,	18229	47	-12	-12	-14	388	343	340	335
75728	ARTERY X-RAYS,	2593	8	10	7	3	324	356	346	335
75736	ANGIOGRAPHY; PE	1320	19	67	68	68	69	116	117	117
75737		2301	10	11	10	7	230	255	253	247
75741	ANGIOGRAPHY; PU	1638	22	10	20	27	74	82	90	94
75742	ARTERY X-RAYS,	3689	14	19	17	15	264	313	308	302
75743		1918	18	9	9	8	107	116	116	115
75744	ARTERY X-RAYS,	4907	13	-3	-3	-2	377	365	367	371
75746	ANGIOGRAPHY; PU	111	4	193	181	161	28	81	78	72

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
75747	ANGIOGRAPHY; CA	345	1	-29	-27	-25	345	244	253	259
75750	ARTERY X-RAYS.	5203	51	22	29	36	102	125	132	139
75751		160	2	25	22	18	80	100	98	94
75752	ARTERY X-RAYS.	4111	38	-5	4	10	108	103	112	119
75753	ARTERY X-RAYS.	1613	8	9	20	32	202	220	242	266
75754	ARTERY X-RAYS.	36480	338	49	46	43	108	161	157	154
75755	ARTERY X-RAYS.	7601	29	22	25	27	262	321	328	334
75757	ANGIOGRAPHY; CO	750	4	-45	-43	-40	188	104	107	113
75762	ANGIOGRAPHY; CO	390	4	78	94	105	98	174	189	200
75764	CORONARY BYPASS	5744	36	-23	-12	-6	160	123	140	150
75766	ANGIOGRAPHY; CO	988	13	141	142	141	76	183	184	183
75767	CORONARY BYPASS	3867	10	-52	-52	-50	387	184	186	193
75772		440	11	152	138	124	40	101	95	90
75774	ANGIOGRAPHY; SE	8746	208	81	80	77	42	76	76	75
75775	ANGIOGRAPHY; CO	9302	92	18	17	16	101	119	118	117
75790	ANGIOGRAPHY; AR	33792	144	-33	-36	-38	235	157	150	145
75820	VEIN X-RAY, ARM	66259	806	-42	-41	-41	82	47	48	49
75821	VEIN X-RAY, ARM	459067	3444	-32	-33	-34	133	91	90	88
75822	VEIN X-RAY, ARM	23570	171	-61	-58	-55	138	53	58	62
75823	VEIN X-RAY, ARM	31582	170	-42	-42	-43	186	108	107	107
75825	VENOGRAPHY; CAV	1110	15	1	13	18	74	74	83	88
75826	VEIN X-RAY, TRU	5199	23	-24	-24	-24	226	172	173	172
75827		2108	21	-22	-11	-6	100	78	90	95
75828		3333	16	-19	-18	-17	208	169	170	173
75832		2373	13	-12	-9	-9	183	160	165	166
75834		1835	8	-11	-15	-19	229	205	195	185
76087	MAMMARY DUCTOGR	9817	93	-7	-7	-7	106	98	98	98
76088	MAMMARY DUCTOGR	1744	19	-30	-29	-28	92	64	65	66
76089	MAMMARY DUCTOGR	4043	29	-81	-81	-81	139	26	26	26
76090	X-RAY EXAM OF B	7306386	200475	3	3	3	36	37	37	37
76091	X-RAY EXAM OF B	75861212	1479085	7	8	8	51	55	55	55
76355	TOMOGRAPHY GUID	9219	54	-47	-43	-39	171	91	97	105
76360	CAT SCAN FOR NE	66976	537	-22	-20	-18	125	97	99	102
76361	CAT SCAN FOR NE	243139	908	-33	-32	-31	268	179	183	184
76365	TOMOGRAPHY GUID	4145	59	9	21	29	70	77	85	91
76366	CAT SCAN FOR CY	14141	60	-31	-29	-29	236	163	166	168
76370	CAT SCAN FOR TH	257793	1672	-47	-48	-49	154	82	80	79
76375	CAT SCANS, OTHE	1114842	10780	-22	-20	-19	103	81	82	84
76500	ECHO EXAM OF HE	12051	322	-35	-35	-36	37	24	24	24
76506	ECHO EXAM OF HE	244770	2035	-52	-53	-53	120	58	57	57
76511	ECHO EXAM OF EY	11224768	88945	-59	-59	-59	126	51	51	51
76512	ECHO EXAM OF EY	13517243	75870	-62	-59	-57	178	68	74	77
76516	ECHO EXAM OF EY	71441430	499331	-66	-66	-66	143	49	49	49
76519	ECHO EXAM OF EY	32280401	224378	-64	-64	-64	144	52	52	51
76529	ECHO EXAM OF EY	624741	4596	-71	-66	-63	136	39	46	50
76700	ECHO EXAM OF AB	19709346	138112	-41	-38	-36	143	84	88	92
76705	ECHO EXAM OF AB	4392883	45877	-36	-37	-37	96	61	61	61
76770	ECHO EXAM ABDOM	6754119	52252	-42	-39	-36	129	76	79	82
76775	ECHO EXAM ABDOM	1084521	11115	-37	-36	-35	98	61	62	63
76805	ECHO EXAM OF PR	1430833	12786	-15	-14	-12	112	95	97	99

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
76815	ECHO EXAM FOR F	80671	1164	-4	-3	-1	69	66	67	68
76825	ECHOCARDIOGRAPH	720	13	171	173	178	55	150	151	154
76855	ECHO EXAM OF PE	456493	3875	-13	-9	-4	118	102	108	113
76856	ECHO EXAM OF PE	6979727	53448	-15	-11	-7	131	111	117	122
76857		178427	2479	40	41	43	72	101	102	103
77400	DAILY RADIATION	12397383	222770	-7	-5	-3	56	52	53	54
77405	DAILY RADIATION	23221128	312169	-17	-17	-17	74	62	62	61
77410	DAILY RADIATION	36005981	394975	-12	-11	-10	91	81	82	82
77415	PORT VERIFICATI	4297369	173366	33	31	29	25	33	32	32
77420	WEEKLY RADIATIO	1574851	13263	-14	-14	-14	119	102	102	102
77425	WEEKLY RADIATIO	2657163	14044	4	4	3	189	198	196	195
77430	WEEKLY RADIATIO	3355111	18619	16	19	21	180	209	215	217
77465	DAILY KILOVOLTA	2182059	60281	5	5	5	36	38	38	38
77470	SPECIAL RADIATI	299808	3558	-14	-17	-20	84	72	70	68
77750	INFUSION OF RAD	4674	54	24	26	25	87	108	109	108
77761	RADIOELEMENT AP	65657	429	-18	-20	-20	153	125	123	122
77762	RADIOELEMENT AP	121634	306	-43	-42	-40	397	227	232	239
77763	RADIOELEMENT AP	128042	230	-55	-54	-53	557	250	256	262
77776	RADIOELEMENT AP	54753	224	-38	-40	-42	244	152	147	143
77777	RADIOELEMENT AP	134383	440	5	-1	-5	305	320	304	290
77778	RADIOELEMENT AP	253357	294	-48	-46	-45	862	452	464	475
77789	SURFACE APPLICAT	89476	1696	-40	-39	-37	53	31	32	33
77790	RADIOELEMENT HA	73282	605	-51	-50	-50	121	59	60	60
78300	NUCLEAR SCAN OF	663515	5992	-73	-73	-73	111	30	30	30
78305	NUCLEAR SCAN OF	7985761	111942	-55	-55	-55	71	32	32	32
78306	NUCLEAR SCAN OF	44350804	572012	-55	-55	-55	78	35	35	35
78310	BONE BLOOD FLOW	439313	8609	-53	-52	-51	51	24	25	25
78315		40410	186	-90	-90	-90	217	21	21	22
78350	BONE MINERAL CO	918609	12679	-51	-51	-51	72	35	36	35
78351	BONE DENSITY ST	78967	1021	-56	-57	-58	77	34	33	33
78380	JOINT IMAGING	91641	1898	-43	-43	-43	48	27	27	27
78381		126937	1772	-54	-56	-57	72	33	32	31
80500	LAB PATHOLOGY C	14894942	693452	-13	-14	-17	21	19	18	18
80502	LAB PATHOLOGY C	1255820	33801	55	51	47	37	58	56	55
85095	BONE MARROW ASP	2990542	58277	38	38	39	51	71	71	71
85097	BONE MARROW INT	1673557	38398	43	43	42	44	62	62	62
85100	BONE MARROW EXA	5078599	58231	10	11	12	87	96	97	98
85101	ASPIRATE, STAIN	289897	5060	16	17	19	57	67	67	68
85102	BONE MARROW BIO	3995635	61445	25	24	24	65	81	81	80
88104	CYTOPATHOLOGY	9077460	389684	57	57	56	23	37	37	36
88125		2995	191	-11	-13	-14	16	14	14	13
88130	SEX CHROMATIN I	5328	403	66	65	61	13	22	22	21
88162	STUDY INVOLVING	397156	10008	14	14	14	40	45	45	45
88170	FINE NEEDLE ASP	945682	17571	26	26	26	54	68	68	68
88171	RADIOLOGY GUIDA	163773	2296	13	12	10	71	80	80	78
88172	STUDY ADEQUACY	636839	18424	71	72	71	35	59	59	59
88173	INTERPRETATION	2119773	45412	31	31	30	47	61	61	61
88300	SURGICAL PATHOL	4536613	367923	-73	-73	-73	12	3	3	3
88302	SURGICAL PATHOL	11169663	418043	-78	-78	-79	27	6	6	6
88304	SURGICAL PATHOL	67269428	1935813	-65	-65	-65	35	12	12	12

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
88305	SURGICAL PATHOL	69283199	1212279	-11	-11	-12	57	51	51	50
88307	SURGICAL PATHOL	31519148	396842	-22	-22	-22	79	62	62	62
88309	SURGICAL PATHOL	23836946	220741	18	18	18	108	128	128	127
88321	MICROSLIDE CONS	1170563	29414	16	19	23	40	46	47	49
88323	MICROSLIDE CONS	298464	8590	16	15	14	35	40	40	39
88325	COMPREHENSIVE R	416698	9484	5	5	7	44	46	46	47
88329	CONSULTATION DU	1242266	32393	53	56	58	38	59	60	60
88331	CONSULTATION DU	18786188	304074	16	16	14	62	72	71	71
88332	CONSULTATION DU	3908756	124763	30	29	28	31	41	41	40
88348	ELECTRON MICROS	703123	5547	11	11	11	127	141	141	141
90000	OFFICE VISIT, N	10280170	443077	8	6	3	23	25	24	24
90010	OFFICE VISIT, N	33993660	1182523	12	11	9	29	32	32	31
90015	OFFICE VISIT, N	61264948	1763819	15	14	14	35	40	40	40
90017	OFFICE VISIT, N	24240668	635882	45	44	42	38	55	55	54
90020	OFFICE VISIT, N	123035655	2271892	27	29	30	54	69	70	71
90030	OFFICE VISIT, M	17700769	1525323	-3	-4	-6	12	11	11	11
90040	OFFICE VISIT, E	170004564	10144804	41	38	35	17	24	23	23
90050	OFFICE VISIT, L	675058311	33830463	49	48	47	20	30	30	29
90060	OFFICE VISIT,IN	818134833	33026473	47	48	49	25	36	37	37
90070	OFFICE VISIT EX	218166093	6748332	59	62	64	32	51	52	53
90080	OFFICE VISIT,CO	152733628	3223988	38	40	41	47	65	66	67
90200	HOSPITAL CARE,	17496139	384906	-21	-23	-25	45	36	35	34
90215	HOSPITAL CARE,M	78292289	1320940	0	-1	-2	59	60	59	58
90220	HOSPITAL CARE,	316448120	4209900	41	41	40	75	106	106	105
90225		5696	173	241	232	208	33	112	109	101
90240	HOSPITAL VISIT,	110610454	5528566	34	31	28	20	27	26	26
90250	HOSPITAL VISIT,	406976151	16311940	39	38	37	25	35	34	34
90260	HOSPITAL VISIT,	591957783	20650006	47	48	49	29	42	42	43
90270	HOSPITAL VISIT,	167962748	4475569	55	56	57	38	58	58	59
90280	HOSPITAL VISIT,	70493635	1678461	73	74	77	42	73	73	74
90282	NEWBORN SERVICE	3606	140	70	68	61	26	44	43	42
90300	CARE FACILITY V	2049015	66107	-5	-5	-5	31	29	29	30
90315	CARE FACILITY V	4084212	112708	39	41	42	36	50	51	52
90320	CARE FACILITY V	11839241	200050	55	59	65	59	92	94	97
90340	CARE FACILITY V	10489591	501069	8	7	6	21	23	22	22
90350	CARE FACILITY V	30348395	1289308	25	26	26	24	29	30	30
90360	CARE FACILITY V	39601534	1500584	38	39	42	26	36	37	37
90370	CARE FACILITY V	11077374	335177	53	54	56	33	50	51	51
90600	LIMITED CONSULT	41329365	756784	-28	-25	-24	55	39	41	42
90605	INTERMEDIATE CO	32812914	648687	27	25	24	51	64	63	63
90610	EXTENDED CONSUL	47359909	724696	40	39	38	65	91	91	90
90620	COMPREHENSIVE C	252350768	2836893	27	29	30	89	113	114	116
90630	COMPLEX CONSULT	76182716	645090	17	19	21	118	139	140	142
90640	BRIEF FOLLOW-UP	3513598	165202	25	22	20	21	27	26	25
90641	LIMITED FOLLOW-	9653250	356170	27	26	24	27	35	34	34
90642	INTERMEDIAT FOL	23913215	651945	14	16	19	37	42	42	44
90643	COMPLEX FOLLOW-	16009075	301534	143	150	162	53	129	133	139
90750	PREVENTIVE MED;	9748	303	55	54	50	32	50	49	48
90752		73	11	534	543	551	7	42	43	43
90760		19385	692	74	66	52	28	49	47	43

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
90761		237	6	28	22	12	40	50	48	44
90762		43	2	49	46	45	22	32	31	31
90825	EVALUATION OF T	537468	13634	121	116	107	39	87	85	82
90831	TELEPHONE CONSU	3668	124	-3	-3	-4	30	29	29	28
90835	NARCOSYNTHESIS	24758	541	29	28	21	46	59	58	56
90847	SPECIAL FAMILY	340392	7873	127	125	122	43	98	97	96
90849	MULTIPLE FAMILY	191137	9233	477	492	584	21	119	123	142
90880	MEDICAL HYPNOTH	19509	450	144	150	160	43	106	108	113
90887	PSYCHIATRIC--VI	71213	2051	83	82	83	35	64	63	64
92004	NEW EYE EXAM &	53162334	1254571	64	64	65	42	69	70	70
92012	EYE EXAM & TREA	99976489	3295839	22	23	23	30	37	37	37
92014	EYE EXAM & TREA	130969497	3246539	11	13	14	40	45	46	46
92020	SPECIAL EYE EVA	5828371	275008	23	30	34	21	26	27	28
92060	SPECIAL EYE EVA	339292	12090	2	5	7	28	29	29	30
92065	ORTHOPTIC AND/O	30252	1569	12	11	10	19	22	21	21
92070	FITTING OF CONT	799929	7688	-13	-12	-12	104	90	91	91
92081	VISUAL FIELD EX	5813296	237617	11	14	15	24	27	28	28
92082	VISUAL FIELD EX	13515624	378162	4	5	5	36	37	37	38
92083	VISUAL FIELD EX	22132597	378601	-3	-2	-2	58	57	57	57
92100	SERIAL TONOMETR	7821649	398695	-1	-1	-1	20	19	19	19
92120	TONOGRAPHY & EY	639603	29894	4	4	4	21	22	22	22
92130	TONOGRAPHY WITH	131922	3502	4	10	14	38	39	42	43
92140	GLAUCOMA PROVOC	914422	44974	3	2	2	20	21	21	21
92225	EXTENDED OPHTHA	15574339	456119	-6	2	5	34	32	35	36
92230	OPHTHALMOSCOPY/	916954	17093	11	13	15	54	59	61	62
92235	OPHTHALMOSCOPY/	40371694	313126	-5	-3	-2	129	122	124	126
92250	OPHTHALMOSCOPY;	9976085	401932	-29	-29	-30	25	18	18	17
92260	OPHTHALMOSCOPY/	297563	7440	-40	-35	-33	40	24	26	27
92270	ELECTRO-OCULOGR	75084	1564	-75	-75	-75	48	12	12	12
92275	ELECTRORETINOGR	1091410	11575	-71	-70	-69	94	27	28	29
92280	SPECIAL EYE EVA	2930661	40938	-62	-62	-61	72	27	28	28
92283		80905	3019	-66	-64	-63	27	9	10	10
92284	DARK ADAPTATION	677988	16825	-61	-60	-60	40	16	16	16
92285	EYE PHOTOGRAPHY	879073	36457	-42	-44	-44	24	14	14	13
92286	INTERNAL EYE PH	17966754	175155	-63	-63	-63	103	38	38	38
92287	SPECIAL ANTERIO	118233	1199	-55	-54	-54	99	44	45	46
92502	OTOLARYNGOLOGIC	23857	394	-12	-13	-13	61	53	53	53
92504	EAR MICROSCOPY	1235031	49904	5	15	20	25	26	28	30
92506	MEDICAL EVALUAT	129060	4395	58	55	53	29	46	45	45
92507	SPEECH/HEARING	277146	10109	30	29	30	27	36	35	36
92508		4897	581	274	285	295	8	31	32	33
92511	NASOPHARYNGOSCO	1386150	23227	59	61	64	60	95	96	98
92512		26235	747	30	30	31	35	46	46	46
92516	FACIAL NERVE FU	20376	742	48	45	42	27	41	40	39
92520	LARYNGEAL FUNCT	9717	266	83	80	78	37	67	66	65
92541	SPONTANEOUS NYS	775042	18840	8	7	7	41	44	44	44
92542	POSITIONAL NYST	378948	14796	4	4	4	26	27	27	27
92543	CALORIC VESTIBU	694692	20189	4	3	3	34	36	36	36
92544	OPTOKINETIC NYS	229771	11588	-1	-0	0	20	20	20	20
92545		210019	11325	-2	-2	-2	19	18	18	18

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
92546		22615	1139	30	31	32	20	26	26	26
92547	USE OF VERTCAL	91914	3648	12	11	13	22	25	25	25
92551	PURE TONE HEARI	528485	40149	-52	-52	-52	13	6	6	6
92552	PURE TONE AUDIO	1257382	85299	-54	-55	-55	15	7	7	7
92553	AUDIOMETRY, AIR	2895993	128716	-57	-57	-57	22	10	10	10
92555	SPEECH THRESHOL	203415	16014	-50	-50	-51	13	6	6	6
92556	SPEECH AUDIOMET	1287987	66720	-53	-54	-54	19	9	9	9
92557	COMPREHENSIVE A	12590077	308451	-57	-57	-57	41	18	18	18
92559		64522	788	-73	-73	-72	82	22	22	23
92560	BEKESY AUDIOMET	21948	1192	-45	-44	-44	18	10	10	10
92561	BEKESY AUDIOMET	36948	1452	-48	-48	-48	25	13	13	13
92562		12049	913	-48	-47	-46	13	7	7	7
92563	TONE DECAY TEST	145965	9777	-36	-34	-33	15	10	10	10
92564		22867	1805	-37	-38	-37	13	8	8	8
92565	STENGER TEST	3676	296	-55	-55	-55	12	6	6	6
92566	IMPEDANCE HEARI	1887109	85201	-57	-56	-55	22	10	10	10
92567	TYMPANOMETRY	1881579	112371	-56	-56	-56	17	7	7	7
92568	ACOUSTIC REFLEX	561387	45935	-44	-43	-42	12	7	7	7
92569		142590	9932	-44	-44	-44	14	8	8	8
92571	FILTERED SPEECH	3244	229	-47	-47	-46	14	7	8	8
92572		1014	101	-79	-79	-78	10	2	2	2
92575	SENSORINEURAL A	11074	931	-37	-40	-41	12	7	7	7
92576		2828	222	-54	-53	-53	13	6	6	6
92577	STENGER TEST, S	8748	350	-35	-33	-32	25	16	17	17
92580	ELECTRODERMAL A	11931	549	-25	-24	-22	22	16	17	17
92581	EVOKED RESPONSE	722711	4994	-74	-74	-74	145	37	37	38
92582		3831	177	-24	-24	-24	22	17	16	16
92584	ELECTROCOCHLEOG	90443	1280	-22	-24	-25	71	55	54	53
92585	BRAINSTEM EVOKE	1533318	12972	-55	-55	-54	118	53	53	54
92589	CENTRAL AUDITOR	16761	842	-30	-28	-27	20	14	14	15
92590	HEARING AID EXA	1507	37	-16	-19	-20	41	34	33	33
92591	HEARING AID EXA	133	6	49	39	32	22	33	31	29
92592		313	14	-37	-38	-37	22	14	14	14
92593	HEARING AID CHE	16	2	94	97	104	8	15	16	16
92594	ELECTROACOUSTIC	162	20	52	53	57	8	12	12	13
92595	ELECTROACOUSTIC	23	6	248	254	268	4	13	14	14
92596	EAR PROTECTOR A	246	11	-19	-16	-14	22	18	19	19
93000	ECG, WITH REPOR	220581463	6486925	-61	-61	-60	34	13	13	13
93005	ECG, TRACING	1637504	76578	-73	-73	-74	21	6	6	6
93010	ECG REPORT ONLY	70158675	5602055	-55	-56	-57	13	6	6	5
93012	TRANSMISSION OF	968894	29670	-62	-62	-61	33	12	12	13
93014	REPORT ON TRANS	556819	32673	-38	-40	-41	17	11	10	10
93018	CARDIOVASCULAR	6222188	98961	-51	-52	-53	63	31	30	29
93024	ERGONOVINE PROV	34348	331	-75	-75	-76	104	26	26	25
93040	RHYTHM ECG WITH	3902007	258597	-49	-48	-48	15	8	8	8
93041		61680	5902	-37	-37	-39	10	7	7	6
93042	RHYTHM ECG, REP	2591303	262931	-44	-44	-44	10	6	6	6
93045	RHYTHM ECG	33185	1385	-69	-70	-71	24	7	7	7
93201	PHONOCARDIOGRAM	279232	7250	-59	-59	-61	39	16	16	15
93202	PHONOCARDIOGRAM	7236	409	-49	-48	-50	18	9	9	9

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
93204		17815	1477	-21	-23	-24	12	10	9	9
93205	SPECIAL PHONOCA	1179132	10570	-71	-69	-66	112	33	35	38
93209	PHONOCARDIOGRAM	20138	552	-6	-7	-8	36	34	34	34
93210		795	24	-59	-60	-61	33	14	13	13
93220	VECTORCARDIOGRA	74974	1863	-33	-27	-21	40	27	29	32
93222	PHONOCARDIOGRAM	112857	3077	-59	-60	-62	37	15	15	14
93240		34	2	9	5	3	17	19	18	18
93255	APEXCARDIOGRAPH	3070	161	1	15	22	19	19	22	23
93259	ECG WITHOUT SUP	300860	4034	-50	-51	-52	75	38	37	36
93262	ECG MONITORING,	39301973	205571	-62	-62	-61	191	72	72	74
93263	ECG MONITORING,	10413500	66151	-64	-65	-66	157	56	55	53
93266	ELECTROCARDIOGR	521933	3661	-54	-54	-55	143	65	65	65
93268		30051	899	-43	-44	-46	33	19	19	18
93501	RIGHT HEART CAT	3321377	8202	-61	-60	-59	405	158	162	167
93503	RIGHT HEART CAT	15420697	54619	-55	-55	-55	282	127	127	126
93505	BIOPSY OF HEART	528670	1722	-49	-49	-49	307	156	156	156
93510	LEFT HEART CATH	825154	2322	-55	-55	-54	355	161	161	164
93511	LEFT HEART CATH	57489	211	-42	-43	-43	272	158	156	155
93524	LEFT HEART CATH	35952	108	-45	-46	-44	333	182	181	187
93526	RT & LT HEART C	661774	1195	-58	-58	-58	554	231	230	234
93527	RT & LT HEART C	101218	191	-42	-42	-42	530	310	309	306
93528	RT & LT HEART C	12356	27	-27	-28	-28	458	334	330	329
93535	AORTIC BALLOON	16673	31	-24	-25	-25	538	411	405	402
93536	INSERTION OF IN	880551	1378	-58	-59	-58	639	266	265	265
94010	BREATHING CAPAC	12763804	391542	-18	-17	-15	33	27	27	28
94070	BRONCHOSPASM EV	1012271	14037	-32	-31	-29	72	49	50	51
94620	PULMONARY STRES	692239	12972	-9	-10	-12	53	49	48	47
94650	PRESSURE BREATH	451596	35852	5	6	7	13	13	13	13
94651	INTERMITTENT PO	87149	8430	10	9	7	10	11	11	11
94652		25	2	-71	-71	-73	13	4	4	3
94656	INITIAL VENTILA	1664716	19235	-10	-11	-12	87	78	77	76
94657	CONTINUED VENTI	4756440	91475	-7	-8	-7	52	48	48	48
94660	OXYGEN UPTAKE,	123536	2463	-6	-8	-10	50	47	46	45
94662	CONTINUOUS POST	886	42	62	59	56	21	34	34	33
94664	AEROSOL OR VAPO	779293	41342	-22	-22	-21	19	15	15	15
95027	SKIN END POINT	427984	42800	745	737	725	10	85	84	82
95065		2323	332	436	416	395	7	38	36	35
95070	INHALATION BRON	16445	573	316	306	292	29	119	116	113
95071	INHALATION BRON	2789	397	739	751	756	7	59	60	60
95078	PROVOCATIVE TES	23479	1765	389	371	356	13	65	63	61
96900	ULTRAVIOLET LIG	1054005	81102	37	37	39	13	18	18	18
96910	PHOTOCHEMOTHERA	1425768	66505	28	30	34	21	27	28	29
96912	PHOTOCHEMOTHERA	1570527	66853	34	34	36	23	31	31	32
99013	TELEPHONE CALLS	127137	32280	365	355	342	4	18	18	17
99014	TELEPHONE CALLS	2281	285	218	213	210	8	25	25	25
99015	TELEPHONE CALLS	835	57	131	127	125	15	34	33	33
99065	EMERGENCY CARE	1045418	49990	421	395	365	21	109	103	97
99152	NEWBORN RESUSCI	151	3	162	158	149	50	132	130	125
99155	MEDICAL CONF;25	410579	12197	26	23	19	34	42	41	40
99156	MEDICAL CONF;50	182441	3267	43	41	38	56	80	79	77

MEAN CHARGES, BY HCPCS, USING ADJUSTED 1987 PROCEDURE FILE AND GPCI:
CPR VS. RBRVS PAYMENTS USING THREE ALTERNATIVE ADDITIVE MODELS:

HCPCS	LABEL	ALLOWED CHARGES: CPR	ALLOWSVC	% CHANGE RVS WITH NO GPCI	% CHANGE RVS WITH OH GPCI	% CHANGE RVS WITH GPCI-BOTH	CPR ALLOWED MEAN	RVS MEAN CHARGE WITH NO GPCI	RVS MEAN CHARGE WITH OH GPCI	RVS MEAN CHARGE WITH GPCI-BOTH
99160	CRITICAL CARE,	52560503	590965	17	15	13	89	104	103	100
99162	CRITICAL CARE,	7770403	187573	41	42	43	41	58	59	59

Source: HCFA, Office of Research and Demonstrations. National 1988 estimates based on 1987 BMAD procedure file.

Appendix E

Allowed Charges for Selected Anesthesia Procedures

Appendix D does not include payment amounts for anesthesia codes. While the Harvard study generated relative work values for 19 anesthesia procedures, it was not possible to generate allowed charge amounts for these procedures since the Part B Medicare Annual Data (BMAD) procedure file did not record the number of procedures provided.

The problem of generating allowed charges for anesthesia was further complicated by the fact that carriers pay for anesthesia services by using Current Procedural Terminology surgery codes rather than anesthesia codes. This problem was solved by crosswalking these 19 anesthesia codes to over 500 surgery codes. To generate the frequency of anesthesia procedures, the 1987 BMAD beneficiary file was used under the assumption that each claim for anesthesia represented one procedure. By using this method it was also possible to compute mean allowed charges under the current payment system.

Current anesthesia allowed charges by procedure were compared to allowed charges under the following additive model:

ALLOWED CHARGE = ((TW*(1+AST))*WCF) + Overhead Pass Through[1]
where:

TW is total work for the procedure,

AST is the opportunity cost factor,

WCF is the conversion factor for work based upon non-anesthesia budget neutral payments (approximately 28 cents), and

Overhead Pass Through is the practice cost payments equal to 44.1 percent of current allowed charges for services for anesthesiologists.

The estimated allowed charges for the anesthesia procedures are presented in Table E.1.

---

[1]This model is similar, but not identical, to the HCFA additive model without a Geographic Practice Cost Index. It is also similar, but not identical, to the Physician Payment Review Commission's additive model.

Table E.1

Allowed Charges Under Additive RVS Model for Anesthesia Procedures Surveyed by Harvard RBRVS Study

Anesthesia Code	Number of Services	Allowed Charges	Estimated RVS Payment	Difference	Percent Difference
Total	105915	28863327	23692452	-5170874	-17.9
00142	36674	7202752	6002571	-1200181	-16.7
00210	1023	491740	443151	-48589	-9.9
00350	2426	1005956	830979	-174977	-17.3
00404	2083	527715	439434	-88281	-16.7
00562	5643	4774599	3676095	-1098504	-23.0
00770	1331	786452	699914	-86539	-11.0
00790	10277	2969008	2329197	-639811	-21.6
00806	574	109313	83371	-25942	-23.7
00840	11521	3489584	3126136	-363448	-10.4
00850	34	7483	7060	-422	-5.6
00910	11062	1559542	1080255	-479286	-30.7
00914	11442	2398683	2047397	-351287	-14.6
00940	2607	313438	222055	-91383	-29.2
01210	1742	474997	425322	-49675	-10.5
01214	3478	1382683	1177619	-205064	-14.8
01270	2273	1056913	849815	-207098	-19.6
01382	1725	312468	252081	-60387	-19.3

SOURCE: Health Care Financing Administration, Office of Research and Demonstrations. 1987 BMAD beneficiary file.

Implementation of a National Fee Schedule

U. S. Department of Health and Human Services
Health Care Financing Administration
September 1989

REPORT TO CONGRESS

NATIONAL FEE SCHEDULE IMPLEMENTATION FOR MEDICARE PHYSICIAN PAYMENT

Louis W. Sullivan, M.D.
Secretary of Health and Human Services
1989

Table of Contents

I. Executive Summary..... Page ES-1

II. Section A: Transition and Major Policies..... Page 1

1. Overview..... Page 1
2. Alternative Implementation Models..... Page 3
3. Uniform Code Definitions..... Page 3
4. Geographic Differential in Payments..... Page 7
5. Conversion Factors and Budget Neutrality..... Page 9

III. Section B: Ancillary Policies..... Page 9

1. Anesthesiology Relative Values..... Page 9
2. Relationship to Radiology Fee Schedule..... Page 10
3. Site of Service Differentials..... Page 10
4. Local Codes..... Page 10
5. Local Modifiers..... Page 12
6. Uniform Definitions of Specialties..... Page 13
7. Codes Without National Relative Values..... Page 14
8. Comparability..... Page 15
9. Inherent Reasonableness..... Page 16
10. Reduced Services/Unusual Circumstances..... Page 16
11. Multiple and Bilateral Surgery..... Page 17
12. Provider Rendering Less Than Full Global Package..... Page 17
13. Assistants-at-Surgery, Physician Assistants and Other Practitioners..... Page 18
14. Other Modifiers That Might Affect Payment..... Page 18
15. Nonphysician Services Billed Under "Physician" Codes..... Page 18
16. Other Minor Payment Issues..... Page 19
17. Limits on Actual Charges and Participating versus Nonparticipating Differentials..... Page 19

IV. Section C: Issues Arising Post-Implementation--i.e., Revisions and Updates..... Page 20

1. New and Changed Codes..... Page 20
2. When and How to Update Relative Values and Conversion Factors..... Page 21

Appendix A
Appendix B
Appendix C

Executive Summary

Pursuant to section 4056(c)(1) of the Omnibus Budget Reconciliation Act of 1987, the Secretary has prepared this report to Congress on technical and operational issues that would be raised by implementing a national Medicare fee schedule for physician payment. The report is organized in three sections. Section A discusses transition options and major policy issues. Section B addresses more ancillary issues and Section C discusses issues that will arise subsequent to fee schedule implementation.

A. Transition and Major Policies

1. Overview

If a resource-based relative value scale (RBRVS) is enacted, the Department recommends a transition period of several years, prior to implementing a totally RBRVS. During this period, charge-based fee schedule payments would begin. There would next be a blend of RBRVS and charge-based RVS payments; and, finally, payment based solely on RBRVS would be instituted. This type of transition is recommended in order to:

- insure accuracy of payments;
- achieve budget sensitive payment results, while making geographic and coding changes;
- determine behavioral changes occurring as payment is based more and more on RBRVS;
- identify emerging beneficiary access problems; and
- where appropriate, make mid-course payment corrections or adjustments.

2. Alternative Implementation Models

There are basically two implementation approaches. One approach (i.e., Model 1) is to implement the fee schedule all at once--no phase in. Under this approach, the current payment system would remain in effect, probably through 1992 and, during this period, new geographic areas and uniform codes and global surgical packages would be instituted.

Model 2 provides for a phase in period, during which payments are made, in part, on the basis of an RBRVS fee schedule. As discussed above, this is the approach we are recommending.

3. Uniform Code Definitions

We are recommending--

- o uniform global surgical packages based on the current dominant practice;
- o clarification of ambiguous codes; and
- o collapsing of many seldom-used codes.

4. Geographic Adjustment

If differentials based on geography are to be recognized, current work must be completed on various geographic practice cost indices. Also, a decision must be made regarding whether current payment localities would be retained under a national fee schedule. If metropolitan statistical areas are chosen as localities, significant technical issues arise if budget neutral or budget sensitive expenditures are to be maintained.

5. Conversion Factors and Budget Neutrality

If conversion factors are to be "budget neutral," we recommend that, in the statute, the Secretary be given substantial latitude in defining budget neutrality. This is because of data problems that would be associated with standardizing geographic areas, service definitions, and global packages during fee schedule implementation.

B. Ancillary Policies

Generally, we are recommending that the Secretary be given the discretion to address these policies by regulation. The policies include such issues as how to pay for multiple procedures, bilateral procedures, and care rendered by assistants-at-surgery under a fee schedule.

C. Post-implementation Issues

1. New and Changed Codes

We recommend that, for new services--i.e., services without national relative values, fee schedule payment be made on the basis of locally-established relative values.

When Current Procedural Terminology code revisions are made annually (i.e., for existing services), we recommend immediately establishing relative values for the revised codes by making appropriate adjustments to the relative value(s) of the predecessor code(s). The nature of the adjustments would depend on the nature of the code change(s).

2. Relative Value and Conversion Factor Updates

We recommend making relative value revisions every 5 years to reflect practice cost and work changes. We recommend 3-year update intervals to reflect new services. We recommend an annual conversion factor update.

National Fee Schedule Implementation For Medicare Physician Payment

Section 4056(c)(1) of the Omnibus Budget Reconciliation Act of 1987 (OBRA 1987) requires that the Secretary conduct a study on Medicare's implementation of a national fee schedule. The section reads as follows:

> "The Secretary shall conduct a study of changes in the payment system for physicians' services, under part B of title XVIII of the Social Security Act, that would be required for the implementation of a national fee schedule for such services furnished on or after January 1, 1990. Such study shall identify any major technical problems related to such implementation and recommendations on ways in which to address such problems. The Secretary shall report to the Congress on such study by not later than July 1, 1989."

In compliance with this provision, the Department of Health and Human Services (the Department) has reviewed the various technical and operational issues which would arise if a national fee schedule were adopted by Medicare. Special attention has been given to issues associated with implementing a fee schedule based on a resource-based relative value scale (RBRVS), such as the one recently developed by Harvard researchers.

This report is organized into three sections. Section A addresses transition and major policy issues. Section B addresses more ancillary issues. Section C discusses post-implementation issues.

A. Transition and Major Policies

1. Overview

Implementation of a national fee schedule for payment of physician services under Medicare would be a challenging task for the Health Care Financing Administration (HCFA) and the 53 Medicare carriers. A number of complex tasks would need to be accomplished in a carefully sequenced manner if implementation is to have a predictable effect on payment levels and budget outlays and if the risk of a major system failure is to be minimized.

The Department recommends that if RBRVS-based payments are enacted, they be phased in over a period of several years, using a percentage blend between current charge based payments and RBRVS-based payments. This approach would permit orderly implementation, minimize potential risks to access, and provide physicians with an opportunity to adapt to changes in payment.

Significant lead time is needed before implementation of a new payment system based fully on RBRVS. This is needed to assure a reasonable level of accuracy in payment determinations. Accurate calculation of budget neutral (or budget sensitive) payment rates will be difficult. The financial interests of three parties are at stake: beneficiaries, providers, and Government. Errors could short-change physicians. Alternatively, errors could increase Federal outlays by hundreds of millions, or even billions of dollars, with corresponding increases in beneficiary copayments and premiums.

Substantial changes in payment would occur under an RBRVS-based fee schedule. These changes are greater in magnitude and far more extensive than any previous changes. As a result, the impact on physician's willingness to treat Medicare patients and accept assignment cannot be predicted with confidence. A gradual transition over a several year period would give physicians an opportunity to adapt and would permit mid-course corrections if serious problems were to develop.

Several background points may illustrate the need for a deliberate, step-wise approach.

Medicare Part B must provide accurate payment determinations for over a billion individual services each year. Medicare is expected to process approximately 463 million claims during 1990, with an average of 2.3 items per claim. Separate areawide prevailing charge limits are maintained for approximately 7,000 procedures in each of the current 250 payment localities, often with multiple limits for a dozen or more different specialties. Additionally, customary charge profiles are maintained for each of 500,000 physicians providing services to Medicare patients.

A further complication stems from the decentralized nature of the current Part B system. A national fee schedule requires a national payment system with uniform rules and policies, otherwise uniform national payment allowances could be inequitable. At present, however, there is substantial variation across the country.

The original Medicare legislation in 1965 gave carriers broad discretion to implement policies that were appropriate for local circumstances. This has led to wide variations in local payment policies. While HCFA has made considerable progress in recent years in conforming policies nationwide, substantial variation still remains, especially in terms of procedure coding.

Some carriers include a broad range of pre- and post-hospital services in global fee definitions for surgical procedures. Others have a much more limited definition. These variations could substantially affect payments if proper adjustments are not made.

Significant diversity also exists in terms of the geographic basis for payment determinations. Most carrier areas correspond to State boundaries. Some carriers have a single payment locality; others have multiple localities. Locality boundaries do not correspond to any uniform system, such as metropolitan statistical areas (MSAs).

Thus, transition to a national fee schedule will require completion of two major tasks: the current customary, prevailing, and reasonable charge payment system must be replaced with an RBRVS-based fee schedule and diverse coding and geographic policies must be conformed to a single uniform national policy.

The constraint of budget neutral (or budget sensitive) implementation further complicates the task. This requires the development of a "crosswalk" between current payment levels, based on current coding and geographic conventions, and corresponding payment levels under the new uniform national policies.

An additional factor is the status of the RBRVS itself. A complete RBRVS will not be available until July 1, 1990, at the earliest. Relative values are currently available for approximately 1,400 codes out of a total of 7,000. The Harvard team is currently engaged in a second phase of the RBRVS study scheduled for completion by July 1, 1990. This phase will provide relative values for additional codes, such that codes for which relative values are established will account for 95 percent of Medicare outlays. Significant changes in currently available relative values are likely to result from a variety of ongoing revisions and refinements planned by the Harvard team for the second phase.

2. Alternative Implementation Models

There are basically two implementation approaches. One approach (i.e., Model 1) is to implement the fee schedule all at once. Another (Model 2) is to transition payments toward the final fee schedule model. Under Model 1, the current payment system would remain in effect, probably through 1992. During this time uniform definitions and geographic areas would be adopted. The major advantage of this option is its orderliness. No payment changes would occur until after all related "housekeeping" adjustments have been made. Its major disadvantage is the slowness with which we would be moving toward what is presumably a more appropriate payment methodology.

Model 2 assumes that a resource-based fee schedule will be adopted. On an interim basis, however, it recommends paying on the basis of a charge-based fee schedule, then on the basis of a blend of charge and resource-based and finally, solely on the basis of an RBRVS. This interim blended payment approach provides an opportunity for:

- o physicians to adapt to payment changes;
- o HCFA to determine behavioral changes; and
- o HCFA to identify beneficiary access problems as they emerge.

3. Uniform Code Definitions

There are essentially two major ways in which code definitions must be made uniform prior to implementing any national fee schedule. First, the components of a service should be uniform across carriers. And, secondly, the definition of the service itself, regardless of its components, should be clear, unambiguous, and subject to little variation in interpretation.

a. Uniform global definitions of services and payments

Carriers should characterize in the same way the extent to which a particular service or code includes ancillary services and supplies and, in the case of surgery, pre- and post-operative care such as visits. This is important for implementing a national fee schedule because failure to establish such uniformity can negate the validity of the assigned relative values. This is especially the case for resource-based relative values. When a national value is established based on one assumption of a global definition, overpayments will result if the actual global definition is less comprehensive. Only if the carriers have the same definitions are the same relative values appropriate.

Currently, there is substantial variation across carriers in the way that global packages are defined for payment purposes. Consistent with section 4056(a)(1) of OBRA 1987, HCFA, along with the Health Insurance Association of America (HIAA) and the Blue Cross and Blue Shield Association (BC/BSA), recently conducted a survey of insurance companies to determine their global surgery practices. They found that most carriers had global payment packages, but that wide variation existed in terms of the nature of those packages.

The most significant aspects of variation in global fees are:

Pre-operative Care: While 74 percent of carriers include some pre-operative care in the global surgical fee, the scope of services included varies.

- Two-thirds of the carriers that include pre-operative care in the surgical global fee relate the pre-operative period to a specified number of days prior to surgery. The number of days covered ranged from the actual day of surgery itself to 30 days prior to surgery. The most frequent period was 3 days (cited by 40 percent of carriers) and 7 days was the next most frequent (21 percent of carriers).

- Seventy-two percent of carriers include the surgeon's evaluation affirming the diagnosis in the global fee. And 53 percent of carriers also include in the global fee the surgeon's consultation regarding the need for surgery.

- Forty-two percent of carriers cover medical treatment of the condition prior to surgery in the global fee. Fifteen percent of carriers include diagnostic testing by the surgeon and 21 percent include extended medical care to prepare the patient for the surgical procedure.

Post-Operative Care: While most carriers include post-operative care in the surgical global fee, they vary in the services included.

- Seventy-nine percent of the carriers employ specific time periods after the surgery to designate a post-operative period. Surgeon's care provided within this period is considered to be in the global fee. Of the remaining carriers, 18 percent defined the end of the post-operative period as the date of the patient's discharge from the surgeon's care and 3 percent as the date of the patient's discharge from the hospital.

- Of carriers using a specific time to define the post-operative period, there is significant variation among carriers in the number of days covered. For example, for cataract extraction with intraocular lens insertion, 29 percent of carriers reporting used 120 days while another 29 percent used 30 or fewer days. For by-pass surgery, 58 percent of carriers used 90 days while 18 percent used 14 or fewer days.

The PPRC, through the use of a consensus panel, has made a recommendation for a global surgical policy. Essentially, the PPRC excludes from the global payment: the principal surgeon's initial consultation, pre-operative hospital visits occurring prior to the day before surgery, related post-operative visits after the 90 day period following surgery, post-operative visits for problems unrelated to the diagnosis leading to surgery, technical procedures not usually performed at the time of surgery, unrelated concurrent operations, and re-operations for complications.

The implementation of any uniform global surgical fee involves significant transition issues. Surgeons must learn new rules. Carriers need to obtain data on the frequency with which services are billed outside the uniform global fee compared to the carrier's current billing practices.

From the perspective of attempting to maintain budget neutrality when implementing a uniform definition, implementation of the Physician Payment Review Commission (PPRC) proposal is extremely problematical. The PPRC definition is essentially a "minimum" global fee which unbundles significant amounts of services currently included in many carrier global fees. No data currently exists on the extent to which services now included in global fees would be billed separately. Unless data were obtained on the frequency of separate billings using the PPRC definition, its implementation could make calculation of a "budget neutral" conversion factor virtually impossible. The PPRC definition also presents surgeons with "gaming" opportunities whereby they can bill for separate services as a way to recoup losses from reducing overpriced procedures.

Therefore, we recommend that the Secretary be given the authority to establish a global surgical package which

approximates the global package practice now applicable to most surgical services paid for by Medicare.

b. Uniform interpretation of currently ambiguous codes

The definitions of some codes are ambiguous and those codes have therefore been subject to varying interpretations by both physicians and Medicare carriers. This is especially a problem for visit and consultation services. In a November 1988 report, the Department's Office of the Inspector General (OIG) found wide variations across carriers in how they code office and hospital visits. ("Problems With Coding of Physician Services", OIG). Figures A and B in Appendix A are from the OIG report. Those figures reflect the wide variation in code usage among carriers. For example, figure A shows that for code 90050, one carrier had 77 percent of its total billings for that code, while another had 3 percent of its total billings for that code. HCFA has also compared the use of some visit and consultation codes in 1986 among carriers. We similarly found wide variations. For example, we found that the percentage of established patient office visits which were for "extended" services (code 90070) ranged from 1.7 percent in one carrier to 23.1 percent in another. (See Appendix A.) These differences are too wide to be explained by differences in patient mix, thereby suggesting widely varying carrier and physician interpretations.

If a national fee schedule is to be implemented, there must be uniform understanding, across providers and carriers, of what activities constitute particular services. Work is underway in both HCFA and the PPRC to improve code specificity and promote uniform interpretation. The Harvard researchers have recommended that we consider adding time duration or scheduled time to help reduce ambiguity. A similar recommendation was made by the PPRC in its 1989 annual report to Congress.

HCFA has serious concerns about adding time to visit and consultation code definitions. Such a change would greatly complicate budget neutrality calculations. With approximately $10 billion in payments for visits and consultations, a 5 percent error could result in a $500 million increase in outlays. The calculation of budget neutral conversion factors might be possible only if, for a period of time, payments under the new definitions are made within the current payment system. Data from that period could then serve as a base for conversion factor calculations.

In addition, the concept of including time, although an interesting idea, has not been well developed or tested. The PPRC report notes a number of serious problems with adding time to the visit and consultation code definitions. These include: how to define and measure time, how to audit time, how to insure that physicians are not rewarded for inefficiency, whether time is intra-procedure time or whether it also includes pre- and post-time, and how scheduled time is determined (if that concept is used).

As required by section 9331(d) of OBRA 1986, HCFA is also working on ways to consolidate as well as clarify ambiguous codes. We have recently suggested certain possible consolidations to the American Medical Association (AMA) and requested its opinion regarding those possibilities. (See Appendix B.) We have also proposed to the AMA the elimination of low volume codes to simplify the coding system. In this connection, it should be noted that, based on 1987 Medicare data, of approximately 7,000 Current Procedure Terminology (CPT) codes, nearly 2,000 were used fewer than 100 times; 2,600 were used fewer than 200 times; and 3,500 were used fewer than 500 times. It should be noted, however, that some of these codes may be used more extensively in the systems of other payors.

The PPRC has indicated that, in order to implement a national fee schedule, there is no need to reduce the number of codes (Annual Report to Congress 1988, p. 57). If the listed services are easily understood to be distinct from one another, but are viewed to be similar in relative value, the solution is not to eliminate one of the codes, but rather to value the services the same. Thus, for many ambiguous services, the PPRC's solution is to keep the codes, improve their specificity and, as appropriate, make the same payment for each. They hypothesize that there will be no incentive to upcode if the payments are correct.[1] HCFA is not as confident as PPRC about our ability to dramatically improve the specificity of currently ambiguous codes. While we support efforts to tighten service definitions, we think code consolidation can help control upcoding opportunities for those services where the definition is somewhat subjective--e.g., in the visit area and in areas where differences are based on such terms as "simple" or "complex." Moreover, we believe reduction of codes and elimination of low volume codes would greatly improve the validity of the fee schedule. Our reasoning is that it is much more difficult to establish reliable relative values for low volume services and using charges to extrapolate such values for such services can lead to aberrant results. Also, seldom used codes detract from rather than enhance strong program administration since: (1) computer capacity is used that could be better used for other purposes (e.g., identifying claims for medical review); and (2) carrier staff resources are diluted.

4. Geographic Differential in Payments

If differentials based on geography are to be recognized, we must take two steps:

---

[1]In its 1989 report, the PPRC further indicates that reducing the numbers of levels of service is not likely to reduce upcoding. In fact, the PPRC has recommended that the code consolidation study mandated by section 9331(d) of OBRA 1986, be delayed.

a. Finalize a geographic practice cost index.

In December 1987, multiple versions of interim geographic practice cost indices (GPCIs) were completed by the Urban Institute and the Center for Health Economics Research. That work was performed under a HCFA cooperative agreement. By the end of 1989, revised forms of GPCIs are to be completed.

b. Determine whether there continues to be a need for existing Medicare localities if a GPCI is adopted.

Medicare has 243 pricing localities. Nevertheless, as has been observed by the GPCI researchers, "the definition of these areas varies considerably among states: Eighteen states have a single prevailing charge statewide. Twelve have major contiguous areas, including both rural and urban in the same cell. Seven states have separate cells for each major city, and 14 have an urban cell and a rural cell or have cells incorporating several cities of similar size." (The Development of an Interim Geographic Medicare Economic Index" by Stephen Zuckerman, W.P. Welch and Gregory Pope, unpublished paper, unnumbered page.)

The establishment of geographic differentials will present some of the most difficult policy choices for Congress and for HCFA to deal with in the development of a national fee schedule. These include the following:

- whether geographic differentials should be introduced in a State where such differentials do not currently exist? In this connection, we would point out that there are 18 statewide localities and we have had requests from physicians in several other States to consolidate localities into a statewide system. Generally, with such a consolidation, urban allowances would be reduced. (The 18 statewide localities are: Alaska, Arkansas, Colorado, Delaware, Washington, D.C. metro area, Hawaii/Guam, Montana, New Hampshire, New Mexico, North Dakota, Puerto Rico/ Virgin Islands, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont and Wyoming.)

- whether the provision providing the 5 percent bonus for physician services in rural manpower and urban shortage areas (section 4043 of OBRA 1987) should be retained.

If MSAs are adopted as the new localities, it will be difficult to implement this change in a budget neutral manner. Frequency and allowed charge data are available on the basis of only current localities. Therefore, in instances where those locality lines are changed, it will be difficult, if not impossible, to allocate frequency, charge, and relative value data to the new geographic configuration and its associated GPCI. If we are unable to accomplish this allocation with some accuracy, budget neutrality cannot be assured.

5. Conversion Factors and Budget Neutrality

We recommend that if any budget neutrality provisions are included in the law, they leave the agency with sufficient discretion to make reasonable estimates given data limitations. We would recommend language such as the following: "The Secretary is to establish a reasonable standard of budget neutrality, based on available data, and is to establish conversion factors consistent with that standard." It is also important that budget neutrality calculations be exempt from judicial review. Flexibility will be important if geographic payment areas and definitions of some services, including of global packages, are altered upon implementation of the fee schedule. If budget-sensitive conversion factors would have to be derived from a data base that includes the old definitions, it may be difficult to make appropriate adjustments to convert the data to the new definitions.

Since we expect behavioral change by physicians in the volume and intensity of services as a result of both downward and upward adjustments in payment, fee schedule legislation should give the Secretary explicit authority to make estimates of anticipated behavioral change to assure budget neutrality.

B. Ancillary Policies

1. Anesthesiology Relative Values

Since March 1, 1989, Medicare pays for anesthesiology services using a uniform relative value system (RVS) established by the American Society of Anesthesiologists. The RVS is based on a system of base units reflecting the various surgical procedures that are performed and time units reflecting the actual time of the individual case. (In establishing the uniform RVS in a Notice of Proposed Rulemaking (NPRM) published January 26, 1989, we announced our intention to eliminate time units in the future.) There is a question as to how the RVS established for anesthesiology services could be integrated with a national fee schedule. We recommend use of the RVS established by anesthesiologists to reflect the appropriate relative differences between anesthesiology services.

A further aspect is the fact that anesthesiologists are paid different rates depending upon whether a service is personally performed or whether the anesthesiologist medically directs concurrent procedures and the numbers of such procedures. Because of the unique problems associated with Medicare payment for anesthesiology services, it is critical that these unique issues of payment be carefully considered in the development of fee schedule policy.

We recommend that the payment distinctions based on personal performance versus medical direction be retained under the fee schedule. This could be done by having medical direction relative values be less than and a percentage of relative values for personally performed services. The percentage would vary according to the number of procedures supervised.

2. Relationship to Radiology Fee Schedule

Since April 1, 1989, the radiology services of radiologists are reimbursed on a fee schedule basis using an RVS developed by radiology specialty societies. Radiology services of nonradiologists are paid for under the reasonable charge system. While we assume that all radiology services will be covered by a national fee schedule, we would urge integrating the RVS that has been established for radiologist services into a national fee schedule to reflect the appropriate relative differences between radiology services. Also, there is an issue as to whether, under a national fee schedule, we should continue fee schedule payment for nonphysician radiology services supervised by radiologists. The radiology fee schedule currently applies to such nonphysician services.

3. Site of Service Differentials

Under the reasonable charge system, there are certain payment distinctions based on the site of a physician's services. For example, when a diagnostic or radiology service is performed outside a hospital, a technical component service is paid in addition to the physician's interpretation (i.e., professional component). Generally, these services either have a separate code or a modifier to distinguish the complete from an interpretation-only service. In addition, a limitation is imposed on physician services rendered in hospital outpatient departments which are commonly performed in physician's offices. This limitation, authorized by section 1861(v)(1)(k), limits payment in hospital outpatient departments to 60 percent of the office prevailing charge. The objective of the provision is to eliminate the payment of duplicate overhead to the physician in the reasonable charge payment and to the hospital in the reimbursement of hospital outpatient costs.

To the best of our knowledge, these issues have not been fully addressed by the PPRC or by Dr. William Hsiao in their work on the development of resource cost-based relative value scales. As part of the implementation of a national fee schedule, we recommend that Congress decide or grant authority to HCFA to decide how and in what circumstances payment under the fee schedule will distinguish between hospital-based and office-based services.

4. Local Codes

Since 1985, all Medicare carriers have been required to use the HCFA's Common Procedure Coding System (HCPCS). HCPCS was developed to satisfy the operational needs of the Medicare and Medicaid fee-for-service reimbursement programs, to ease communication between providers and payors by replacing various uncoordinated systems with a single national coding system, and to facilitate comparisons among and between payors. HCPCS incorporates CPT-4. In addition to CPT-4, HCPCS contains codes

and modifiers developed by other professionals and insurers to meet their reporting needs as well as the codes developed by HCFA, State agencies, and Medicare contractors to meet the claims processing needs of the Medicare and Medicaid programs. While the coding system is designed to improve the ability of physicians and suppliers to communicate the services they furnish, more importantly, the codes offer a degree of specificity and uniformity that permits a uniform application of HCFA coverage and payment policies.

HCPCS is designed with three levels of codes and modifiers. There is an upward progression of these codes from the lowest level (local assignment) to the highest level (national assignment) with HCFA and other third parties monitoring the entire system to ensure uniformity. The first level (national assignment) contains only the AMA's CPT-4 codes and modifiers. These codes are all 5-digit numeric. The AMA maintains responsibility for this level of codes. The second level (national assignment) contains the codes and modifiers for physician and nonphysician services that are not included in CPT-4, (for example, ambulance, durable medical equipment, orthotics and prosthetics). These codes are alpha-numeric (ranging from A to V) and are maintained jointly by a panel representing HCFA, BC/BSA and HIAA. The third level (local assignment) contains the codes and modifiers for services needed by the individual carrier or State agency to process Medicare and Medicaid claims. These codes are used for services that are not contained in either of the first two levels. The local codes are also alpha-numeric, but are restricted to the code ranges beginning with W, X, Y, and Z. These codes are used for items and services not having the frequency of use, geographic distribution, or general applicability to justify a code assignment at a higher level.

Because of the use of HCPCS level III (i.e., local) codes, carriers are not entirely uniform in terms of the codes they recognize for payment purposes. As of 1987, each carrier used local codes to some degree. In 1987, 3.8 percent of Medicare claims were paid under such local codes. This represented 3.1 percent of allowed charges. In two New York carriers, one serving Queens and the other Manhattan, 1987 local codes represented 14.3 percent and 10.2 percent, respectively, of allowed charges. In Minnesota-Travelers, 1987 local codes represented 23.3 percent of allowed charges. In these three areas, the local codes primarily represent physician services, as opposed to nonphysician services. Thus, in certain carrier areas, local code usage for physicians' services has remained high. (See Appendix C.)

HCFA has efforts now underway to eliminate or reduce local code usage. Complete information about current local code assignments has recently been collected from all Medicare carriers. That data are being analyzed to determine which services need to be referred to the CPT-4 Editorial Panel for possible assignment of

CPT-4 codes. Other nonphysician services and supplies will be referred to the Alpha HCPCS panel for assignment of appropriate national codes. In this analysis, priority is being given to codes for physician services and, as a result, we anticipate a substantial reduction in the use of local codes for physician services coincident with or prior to implementation of the 1990 HCPCS. Additionally, the review of this material will help to establish criteria for future assignment of codes to new services and supplies as they become available.

In order for a truly national RVS to be implemented, local codes must be available for only new services for which national codes have not yet been established. Therefore, existing services should not be subject to different characterizations, for payment purposes, from one carrier to the other. Of course, some latitude could be permitted, even for existing services, similar to the approach used in the recently implemented radiology fee schedule. During the summer of 1988, HCFA attempted to eliminate all local codes for radiology services. In fact, carriers were advised in September 1988 to convert any of their level III codes for radiology services to CPT-4 or level II alpha-numeric codes by January 1, 1989, so that the services represented by those codes would be subject to national relative values. Many of the carriers, however, objected to the total elimination of all local radiology codes and requested that we reconsider our decision. In support of their request, the carriers identified a number of local codes for which there are no appropriate CPT-4 or level II alpha-numeric codes. We accepted the carriers' recommendation.

As long as adequate lead time is provided for implementation of the national RVS to allow time for converting to uniform codes, we recommend that the use of local codes not representing new services be eliminated. Local codes should be used by carriers only for new services for which national codes have not yet been established. Services with local codes would be paid for based on locally-established relative values. We anticipate requiring 24 months to eliminate all local codes which do not represent new services.

5. Local Modifiers

Modifiers are 2-digit suffixes added to basic procedure codes for the purpose of providing further detail regarding a service. Some are payment related and some are not. As the above discussion indicates, there are national or HCPCS levels I and II modifiers that have one definition for all carriers. Also, there are local or HCPCS level III modifiers; i.e., modifiers defined uniquely from one carrier to the next.

If payment distinctions based on modifiers are to be made under a national fee schedule, only uniform or national modifiers should be used. As indicated above with regard to local codes, local modifiers (that affect payment) could continue only if codes with such modifiers are paid for on a local fee schedule basis (i.e., based on locally-established relative values).

As reflected in 1987 Part B Medicare Annual Data files, most local modifier billings are associated with clinical laboratory claims. Among the highest volume local modifiers used for other than clinical laboratory services, there were approximately 40 million claims for over $3.6 billion in submitted charges and over $2.3 billion in allowed charges. (Examples of these local modifiers are: California Blue Shield using modifier "WL" for "unusual hours for patient convenience" and Pennsylvania Blue Shield using the same modifier to represent a specific anesthesia service. Similarly, modifier "W8" means second assistant surgeon in California Blue Shield, second surgical procedure in Colorado and physical therapy in Arizona. In California Blue Shield, "WC" means "only patient seen in nursing home visit" and in South Carolina, that modifier means "refraction was performed during eye examination.")

HCFA is attempting to reduce the use of local modifiers. The information regarding local coding that was recently obtained from carriers also included data about local modifiers. HCFA is currently building a modifier data base containing all modifiers used by each carrier and the modifier description. This task is about 75 percent completed. Reports generated from this data base can be used to reduce the use of local modifiers. Just as with codes, local modifiers are being reviewed for submissions to both the CPT-4 and Alpha Editorial Panels for consideration of national assignments. Also, criteria for future assignment of local modifiers are expected to be developed from this effort.

As with local codes, we recommend that local modifiers, which affect payment, be eliminated.

6. Uniform Definitions of Specialties

Currently, there are marked differences in how carriers assign physicians to a specialty in order to establish prevailing charge screens. Although some carriers use a narrow definition of a specialist (i.e., one who has attained board certification or has had prerequisite training in a particular field), most carriers permit physicians to self-designate their specialty for payment purposes. Many carriers calculate discrete prevailing charge screens for individual specialties; however, these carriers may combine localities or, if necessary, specialties, to establish prevailing charge screens if there are insufficient data for a particular service to establish prevailing charges by separate locality and specialty. In addition, some carriers use groupings of specialties; one carrier groups by type of service; and a few carriers use single prevailing charge screens for all physician services without regard to specialty practice.

A uniform approach to specialty recognition and designation is required under a national fee schedule.

On April 22, 1988, Medicare published a notice requesting comments on a possible proposal to eliminate specialty differentials in our payments (Federal Register, Vol. 53, No. 70, p. 12037-12041). We received comments from 35 national organizations, most of which represented specific specialties. Twenty-eight of those organizations oppose eliminating specialty differentials. Nevertheless, we are considering the publication of an NPRM to eliminate all specialty differentials in our payment policies. If this policy becomes final, uniform specialty definition would not be a fee schedule implementation issue.[2]

On the other hand, if the decision is made to retain specialties, there will be some operational issues associated with achieving uniformity. While it may be relatively simple to establish the uniform list of specialties to be recognized, substantial effort must go into defining when a physician qualifies as a particular specialist. Self-designation will no longer be acceptable. Developing such criteria will not be an easy task. Should we use board certification, completion of specialty training and/or peer competence certification? Should we use the same approach for each specialty? Moreover, once criteria are established, carriers will need significant lead time, prior to implementing a national fee schedule, to re-establish the specialty status of each physician under those new uniform standards. In addition, they will have to periodically verify that the physician still meets that specialty criteria.

7. Codes Without National Relative Values

How much should be paid for a service when it has no national relative value? This can be a significant issue. The Harvard researchers have concluded that there will be some procedures left off of their final RVS. These would be low volume services for which they question the reliability of their extrapolation process (Journal of the American Medical Association, Oct. 28, 1988, p. 2384.) Since, as noted earlier, 3,500 of the approximately 7,000 CPT codes were billed fewer than 500 times, probably half of the current CPT codes would be left without national relative values at the end of the Harvard work. Also, it is possible that new procedures would be covered by Medicare before national values are established for them. Also, the problem of unvalued codes can be minimized if substantial code consolidation occurs.

---

[2]However, there might still be a need for uniform specialty definitions for purposes other than payment; e.g., for participation directory listings or for utilization review screens. Also, uniform specialties might be needed if payment is made for services which are defined with specialty distinctions.

We have identified several options. (1) We can pay for such "unvalued" procedures on a reasonable charge basis. If these are rare or new services, there would likely be extensive gap-filling in the establishment of such reasonable charge screens. (2) We can have a local fee schedule for unvalued services by having carriers establish their own relative values for the services. For some services, this is the way in which the radiology fee schedule was implemented. (3) We can have a case-by-case system, whereby each carrier would pay each claim on a "by report" basis. This means that each claim would be reviewed by medical personnel and paid on the basis of the results of that review. A problem with this approach is that it would leave many procedures without values on which physicians can rely prior to rendering the services and inconsistent determinations are almost inevitable. Much of the simplicity and certainty which a fee schedule is intended to bring about would not apply to many types of services. (4) We could establish national values using expert medical panels.[3]

We recommend a local fee schedule system, with carriers establishing their own relative values. (Nevertheless, we would anticipate "by report" payment for the catch-all "unlisted procedures" code categories.)

8. Comparability

Section 1842(b)(3)(B) of the Act provides that reasonable charge payments shall not be higher than the carriers' private business payments to its own policyholders and subscribers for comparable services under comparable circumstances. While we have no national data regarding the extent to which that limit is applied, there have been estimates that in the State of Michigan, annual program savings as high as $13.3 million were achieved in 1986.

Under a national fee schedule, Congress must decide whether comparability will continue to be an applicable payment screen. Under current law, comparability applies when payment is on a charge basis. Therefore, the current statute may permit us to apply a comparability limit when fee schedule payments are based on charge-based relative values. (Currently, the comparability screen is not applied when payment is made under the laboratory and radiology fee schedules. HCFA, however, is considering a change in this policy.) The statute must be amended, however, if comparability is to apply to payments based on a resource-based RVS.

---

[3]A fifth option is the one rejected by the Harvard researchers and that is to extrapolate a value based on charge data, regardless of the paucity of that data. This is not an option to pursue, given the lack of confidence one would have in the results.

9. Inherent Reasonableness

When Medicare payment screens based on charge data are found to be grossly excessive or deficient, the Secretary is authorized to establish special reasonable charge limits for physicians' services. This authority exists so that the Secretary is able to ensure that the screens applied are inherently reasonable. (Section 1842(b)(8) of the Act.)

The inherent reasonableness policy exists to "correct" instances where the reasonable charge system results in aberrant payment screens. That policy does not apply when other than reasonable charge payment is being made. Therefore, inherent reasonableness does not apply when payment is made under the laboratory or radiology fee schedules. Unless there is legislation to the contrary, inherent reasonableness would similarly not apply under any national fee schedule. We believe, however, that it would be appropriate to maintain the ability to invoke inherent reasonableness under fee schedule payments, at least as a means of making "corrections" between RVS revisions.

10. Reduced Services/Unusual Circumstances

Under current reasonable charge policy, carriers may pay amounts higher than those normally paid for a service. This can be done where there are unusual circumstances or medical complications requiring additional time. CPT modifier 22 represents these circumstances. It was billed 690,000 times in 1987, for $104 million in allowed charges. Similarly, under reasonable charge policy, carriers may pay less when a service with modifier 52, which represents reduced services, is billed. In 1987, that modifier was billed 3 million times for $108 million in allowed charges. Consistent with the position we took on the radiology fee schedule. We recommend that these modifiers not be recognized under a national fee schedule.

These modifiers, and the concepts which they represent, are generally so broad that standard payment screens are not applied to them. A wide variety of circumstances can fit into the concept of a reduced or unusual version of a particular service and, under reasonable charge, they are usually paid for on a "by report" basis. Under a fee schedule, we propose that payment for services with reduced services or unusual circumstances modifiers be the same as for the unmodified code. In large part, it defeats the purpose of establishing a national RVS when one allows exceptions for unusual or reduced services.

CPT-4 includes a "Special Services and Reports" section that includes codes for "after hours" services (e.g., codes 99050 and 99052), extra supplies and materials (e.g., codes 99070 and 99071), unusual travel (e.g., 99082) and prolonged physician attendance (codes 99150 and 99151). Essentially, these codes, and others in that section, serve much the same purpose as the unusual circumstances modifier. Therefore, treatment of the codes and the modifier under the fee schedule should be consistent.

11. Multiple and Bilateral Surgery

When bilateral procedures are performed at the same operative session, many carriers' reasonable charge practice has been to establish the bilateral prevailing rate at 150 percent of the unilateral prevailing rate (modifier 50). Similarly, when multiple (nonincidental) surgical procedures are performed in the same operative session, most carriers apply a so-called "fee and one-half rule." They apply the regular allowance amount for the most expensive procedure; but the allowance(s) for the remaining procedure(s) is capped at 50 percent of the procedure's customary or prevailing charge (the modifier here is 51). We believe that these are reasonable policies that reflect appropriate payment relationships between the multiple and bilateral services at issue. Therefore, we recommend that these policies be carried over to a national fee schedule and that they be made uniform and mandatory.[4] An alternative, which we believe to be an onerous one, would be to establish specific relative values for the multiple and bilateral version of each surgery, as appropriate.

12. Provider Rendering Less Than Full Global Package

Under reasonable charge policy, carriers are to insure that, when they pay more than one practitioner for care rendered to a beneficiary, the total allowance for all practitioners is not to exceed the global allowance that would have been paid to a single practitioner. This has been an issue for global surgical packages rendered by both ophthalmologists and optometrists. It also frequently arises when cardiologists perform some post-operative care when surgery was performed by a thoracic surgeon.

If uniform global packages are adopted, we recommend the relative value of a global package also be allocated to the various components of the package. Prior to fee schedule implementation, this would be essential if Medicare is to avoid duplicate payment. Essentially, this would mean that, in any case where modifiers indicate that surgery-only (54), or only pre- (56) or post-operative care (55) was rendered, no global payment would be made. Payment based on only the relative values of the components of the global would be made. Also, it is possible that modifiers in addition to 54, 55, and 56 would have to be established if other components of global packages were being provided. An alternative would be to permit only one practitioner to bill, regardless of how many participated in performing the various pieces of the services.

---

[4]Unlike the circumstances associated with reduced or complicated cases, the services at issue here are very specific. Therefore, standard screens can reasonable be applied to them. The fee schedule amount for a bilateral procedure would be 150 percent of the fee schedule amount for the unilateral version. Similarly, for multiple procedures, the procedure with the highest relative value will be paid for on the basis of that value, while the other procedure(s) will be paid for based on 50 percent of its regular relative value amount.

13. Assistants-at-Surgery, Physician Assistants and Other Practitioners

Under reasonable charge policy, when payment is made for services of an assistant-at-surgery, the reasonable charge of the assistant-at-surgery may not exceed 20 percent of the prevailing charge for the surgical procedure. We recommend that this policy be continued; i.e., that payment be 20 percent of the fee schedule amount.

Under reasonable charges, the services of physician assistants are reimbursed at a particular percentage of the prevailing charge of a participating physician in the same locality. HCPCS modifiers are used to identify the services of physician assistants. We recommend that payment for physician assistant services be based on fee schedule amounts and that HCFA be given the authority to determine the applicable percentage to be paid based on current statutory rules and other pertinent data.

We would further recommend that the national fee schedule include the services of other practitioners, including certified registered nurse anesthetists, optometrists, chiropractors, psychologists, physical and occupational therapists and podiatrists. We recommend rates that are budget neutral with current expenditure levels. This could be accomplished in stages if any critical data are not available when the legislation establishing the national fee schedule is enacted. We stress, however, that we would not recommend the expansion of current direct billing rights for these practitioners.

14. Other Modifiers That Might Affect Payment

We believe that our previous discussion has addressed most situations where modifiers that affect payment will be used. There are other HCPCS modifiers, however, for which some carriers may currently be applying special payment rules. Such other modifiers include:

- 20 -- Microsurgery
- 47 -- Anesthesia by Surgeon
- 62 -- Two Surgeons
- 66 -- Surgical Team
- 75 -- Concurrent Care
- 76 -- Repeat Procedure by Same Physician
- 77 -- Repeat Procedure by Another Physician

It may be appropriate, therefore, to resolve the treatment of these modifiers under a national fee schedule. Resolution could, of course, be that these modifiers would have no payment consequence. For payment purposes, they could be treated as though the code were unmodified.

15. Nonphysician Services Billed Under "Physician" Codes

Some services or codes billed by physicians, such as diagnostic test, radiology or physical therapy codes, can be performed and billed by nonphysicians as well. Will the national fee schedule apply only to physicians' services; or will it also apply to global services (i.e., physicians' services and diagnostic services billed together), or will it also apply to physical therapy or technical components of diagnostic

services not billed by physicians? We recommend that the fee schedule (and any associated limiting charges for nonparticipants) apply to the CPT services for which relative values have been established, even if not rendered by a physician. (Note that relative values would presumably not be established for clinical laboratory services, which are in the 80,000 section of CPT. Those services are paid for under the laboratory fee schedule, regardless of who bills for them.) Therefore, any entity billing under a nonclinical laboratory CPT code would be paid under the "physicians" fee schedule. This would avoid a dual and possibly inequitable payment system for the same services. Also, it would avoid the establishment of new billing arrangements whereby physicians might seek to have nonphysician entities billing for technical services under reasonable charge.

Another issue is non-CPT services billed by physicians. Would they be subject to the fee schedule?

16. Other Minor Payment Issues

There are a variety of miscellaneous payment issues which must be considered in the development of a national fee schedule. These include the following:

- o Injection fee.--We currently allow physicians a nominal fee to provide a routine injection. Will this fee be integrated into a national fee schedule?

- o Collection fee.--We currently allow physicians a $3 specimen collection fee to collect a blood sample by venipuncture for a laboratory test.

- o Transportation fee.--Some carriers allow additional amounts for extraordinary travel associated with a house call.

Congress will need to decide or delegate to HCFA how these fees are to be reimbursed in the future.

17. Limits on Actual Charges and Participating versus Nonparticipating Differentials

A major issue to be addressed is whether, under a fee schedule, limits on the actual charges of nonparticipating physicians should be established. There would appear to be no policy reason to make a distinction between having such beneficiary protections under reasonable charge and not under a fee schedule.[5] There presently are two types of charge limits used in Medicare--the maximum allowable actual charge (MAAC) and the limiting charge. The MAAC is based on a physician's actual charge level in a base period and is unique for each

---

[5]MAACs, under reasonable charge, are scheduled to expire on December 31, 1990.

physician. Another type of limiting charge is 125 percent of the prevailing charge. That limiting charge was established in the legislation reducing payment for overpriced procedures (section 4045 of OBRA 1987). The limiting charge is much simpler to explain and easier to administer and if Congress chooses to retain a form of beneficiary protection against balance billing, we recommend that it be based on the concept of a limiting charge rather than the MAAC. A policy issue that must be addressed, if a charge limit is retained, is whether all services (physician and nonphysician) rendered by or billed by nonparticipating physicians are to be subject to the limit. Currently, MAACs apply to only physicians' services and some have been concerned that certain physicians who bill for global services may be circumventing the MAAC limit on the professional component by shifting charge increases to the technical side. Of course, it may not be equitable to make nonphysician services performed by physicians subject to the charge limit if nonphysicians billing for those same nonphysician services are not subject to such a limit.

Congress will also need to decide whether it wants to establish a participating versus nonparticipating fee schedule payment differential. Implementing such a differential under a fee schedule would not raise any new administrative issues. We recommend that such differentials be continued.

C. Issues Arising Post-Implementation--i.e., Revisions and Updates

1. New and Changed Codes

There is continual change in the way that medicine is practiced. New technologies are developed and there are almost always new ways to render old services. Therefore, there can be entirely new codes, deleted codes, merged codes, split codes, and modified codes. Prior to implementing a fee schedule containing a certain list of codes, we must decide how to pay when that list changes.

For truly new services, i.e., new technologies, we could determine that there will be no Medicare coverage until a national value has been established. Alternatively, we could provide for locally-established relative values until national ones are in place. In any event, some mechanism will need to exist for establishing national values at some time. What that mechanism is will depend on the judgments and data that went into the initial valuation process. If charge data were used, presumably it will be used again. If resource costs such as work and practice costs were used, physician panels (for work determinations) and certain other data may be needed.

We will need to determine how often the relative values are to be revised to reflect new services, new practice costs and patterns, etc. If coverage is delayed until valuation occurs, there would be substantial pressure to revise at least every year. If local relative values are used until national ones are established, the revision may occur less frequently. We recommend use of local relative values.

The CPT is revised every year. We will have to make judgments about how to treat those annual changes such as code splitting, merging, and deletion. We recommend following our radiology fee schedule precedent and having carriers do the following:

- When there is code splitting and each resultant service is equivalent to the original code, the resultant codes could be given the relative value of the original code.

- When there is code splitting and the resultant codes are components of the original code, carriers could apportion the relative value over the resultant codes (probably based on national guidance).

- When there is a code merger and the previous codes were equivalent services, unless otherwise indicated, the average relative value from among the previous codes could apply to the resulting code.

- When there is a code merger and the previous codes were components of the new code, the sum of the relative values of the previous codes could equal the relative value of the new code.

- When there is a revision or editing of an existing code, there could be no change to the relative value unless HCFA provided notification of such a change. (As is possibly the case for valuing new procedures, an expert panel of physicians could need to be available to provide guidance on these circumstances. Also, the PPRC, at the time that the AMA editorial panel makes a CPT change, could make a recommendation with regard to any associated relative value changes which should also be made.)

2. <u>When and How to Update Relative Values and Conversion Factors</u>

The above discussion addresses relative value revisions associated with new technologies and coding changes. As indicated above, if local relative values are used for new services, such changes need not be annual ones. National revisions would update to reflect new services, changes in practice costs and changes in work relationships. We recommend relative value revisions every 5 years for major updates and re-surveying for work values, but 3-year intervals to establish national values for new technologies then subject to local values.

In its 1988 report, the PPRC identified several options for conversion factor updates:

- a formula approach linking the conversion factor to an index such as the Medicare economic index;

- using the existing regulatory rulemaking process of the Department;

- recommendations to the Secretary of the Department or to Congress by an independent board or commission; and

- negotiation between physicians and a representative of the Federal Government.

We recommend an index approach and annual updates.[6]

[6]In its 1989 annual report, the PPRC recommends the adoption of national expenditure targets for Medicare physician payment. Under such targets, the conversion factor update would be determined by the extent to which the previous year's expenditure target was met.

Appendix A

Comparative Frequency of Code Utilization in 1986 Within Specific Categories of Services

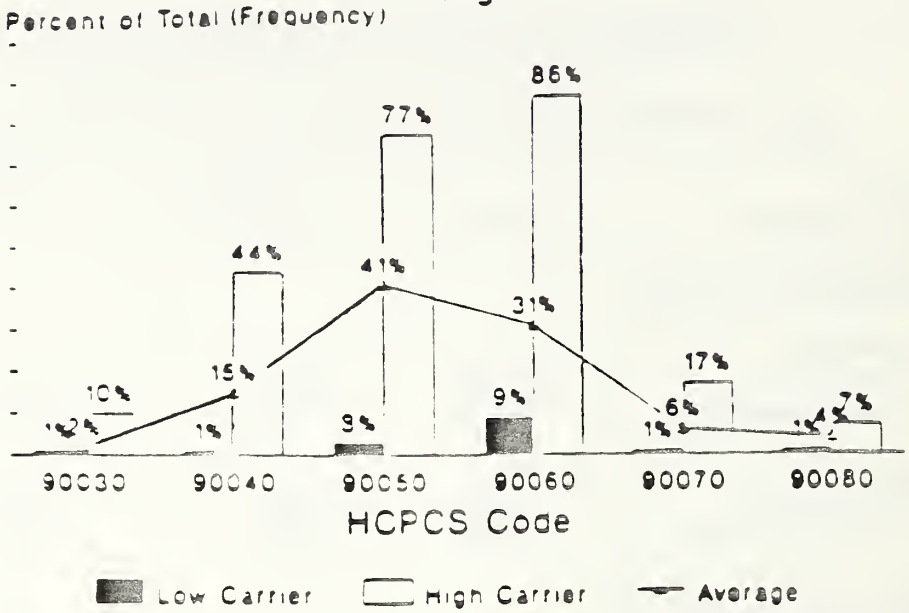
Range of Percentages of Total Services Within Service Category

Code and Service Category	National	Lowest Among Carriers	Highest Among Carriers
Office Medical Services			
New Patient			
90017 (extended)	8.45%	1.18%	16.52%
90020 (comprehensive)	35.28%	3.67%	53.69%
Established Patient			
90070 (extended)	7.55%	1.72%	23.09%
90080 (comprehensive)	3.66%	0.52%	8.59%
Hospital Medical Services			
New and Established Patient			
90270 (extended)	9.25%	1.43%	22.37%
90280 (comprehensive)	3.60%	0.03%	31.80%
Consultations			
Initial Consultation			
90620 (comprehensive)	55.59%	23.09%	82.26%
90630 (complex)	13.10%	0.17%	37.11%

Source: HCFA Analysis.

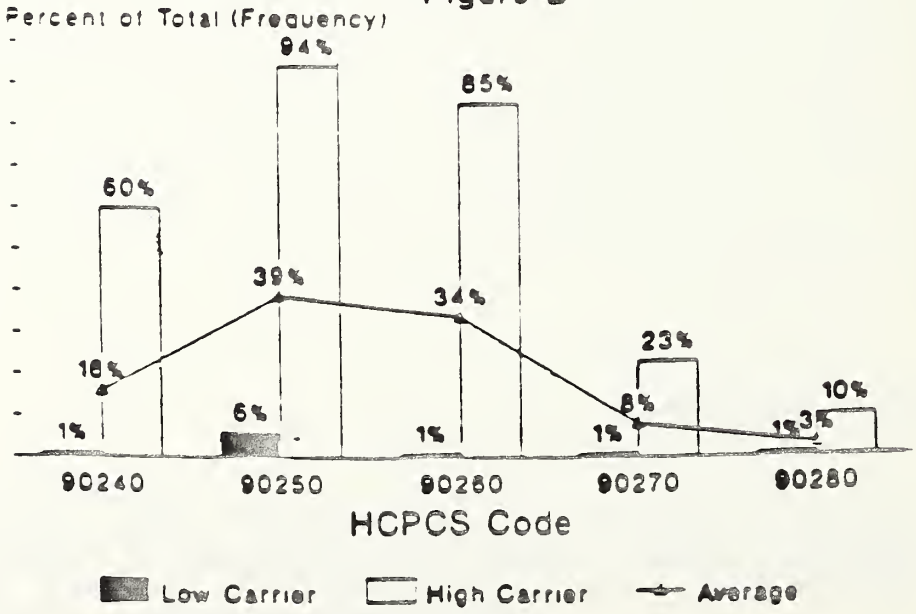
Bills to Carriers for Established Patient Office Visits (1986)

Figure A



Bills to Carriers for Subsequent Hospital Care (1986)

Figure B



Source: 1988 HHS/OIG Report

Potential Code Groups for Payment Purposes

The following criteria were taken into account (along with some judgment calls) in establishing and categorizing the potential code groups listed below:

Category 1: The differences between related services are clear, but the Medicare carriers' (national average) allowances for them are similar; or

Category 2: The differences between related services are not clear (i.e., subject to different interpretations by different persons); or

Category 3: Words such as "simple" or "complex" are used in the terminology to describe the difference(s) between related codes, and the carriers' (national average) allowances for the codes are similar. (The list below does not include any "Category 3" items.)

Category 4: Category 4 was used for codes that we are still analyzing to determine whether they should be grouped for payment purposes (because the carriers' national average allowances for them are too dissimilar). At a minimum, the codes need to have more specific and detailed narrative descriptions than vague terms such as "simple" and "complex."

Office Medical Services

New Patient

90000 and 90010 (Category 2)
90015 and 90017 (Category 2)

Established Patient

90040, 90050, and 90060 (Category 2)
90070 and 90080 (Category 2)

Home Medical Services

New Patient

90100, 90110 and 90115 (Category 2)

Established Patient

90130 and 90140 (Category 2)
90150 and 90160 (Category 2)

Hospital Medical Services

New and Established Patient

Initial Hospital Care

90200 and 90215 (Category 2)

Subsequent Hospital Care

90240 and 90250 (Category 2)
90260 and 90270 (Category 2)

Skilled Nursing, Intermediate Care and Long Term Care Facilities

New or Established Patient

Initial Care

90300 and 90315 (Category 2)

Subsequent Care

90340, 90350 and 90360 (Category 2)

Nursing Home, Boarding Home, Domiciliary, or Custodial Care Medical Services

New Patient

90400 and 90410 (Category 2)

Established Patient

90440 and 90450 (Category 2)
90460 and 90470 (Category 2)

Emergency Department Services

New Patient

90500, 90505 and 90510 (Category 2)

Established Patient

90530, 90540, 90550, 90560 (Category 2)

Consultations

Initial Consultation

90600, 90605, 90610, 90620 and 90630 (Category 2)

Follow-up Consultation

90640, 90641, 90642 and 90643 (Category 2)

Confirmatory Consultation

90650 and 90651 (Category 2)
90652 and 90653 (Category 2)

Psychiatry

Psychiatric Therapeutic Procedures

Medical Psychotherapy

90841 and 90843 (Category 2)

Gastroenterology

91032 and 91033 (Category 2)

Ophthalmology

General Ophthalmological Services

New Patient

92002 and 92004 (Category 2)

Established Patient

92012 and 92014 (Category 2)

Special Ophthalmological Services

92018 and 92019 (Category 2)

Ophthalmoscopy

92225 and 92226 (Category 1)

Cardiovascular

93510, 93511, 93514 (Category 1)
93731, 93732 and 93733 (Category 1)
93734, 93735 and 93736 (Category 1)

Neurology and Neuromuscular Procedures

95819 and 95821 (Category 1)
95857 and 95858 (Category 1)
95880 and 95882 (Category 1)
95900 and 95904 (Category 1)
95950, 95951 (Category 1)

Surgery

Integumentary System

10060 and 10061 (Category 4)
10080 and 10081 (Category 4)
10120 and 10121 (Category 4)
10140 and 10141 (Category 4)
11000 and 11001 (Category 1)
11730 through 11732 (Category 1)
11760 and 11762 (Category 4)
11770 through 11772 (Category 4)

15500 through 15515 (Category 1)
15540 through 15580 (Category 1)
15700 and 15710 (Category 1)
15740, 15750 and 15770 (Category 1)

Musculoskeletal System

20661 through 20663 (Category 1)
21040 and 21041 (Category 4)
27060 and 27062 (Category 1)
27070 and 27071 (Category 1)
27130, 27132 and 27134 (Category 1)
28192 and 28193 (Category 2)

Respiratory System

31000 and 31002 (Category 1)
31030 and 31032 (Category 1)
31031 and 31033 (Category 1)
31081, 31084, 31085 and 31087 (Category 1)
31360 and 31367 (Category 1)
31365 and 31368 (Category 1)
31570 and 31571 (Category 1)
32035 and 32036 (Category 1)
32700 and 32705 (Category 1)

Cardiovascular System

33200 and 33201 (Category 1)
33206 and 33207 (Category 1)
33511 and 33512 (Category 1)
33513, 33514 and 33516 (Category 1)
34001, 34051, 34101 (Category 1)
35141 and 35151 (Category 1)
35221 and 35226 (Category 1)
35236 and 35256 (Category 1)
35301 and 35351 (Category 1)
35321, 35371 and 35381 (Category 1)
35331 and 35341 (Category 1)

35506, 35556, 35558 and 35566 (Category 1)
35509, 35521, 35551, 35565 and 35571 (Category 1)
35516, 35531, 35549 (Category 1)
35501, 35541, 35546 (Category 1)
35582 and 35585 (Category 1)
35583 and 35587 (Category 1)
35601, 35606, 35631 and 35656 (Category 1)
35616, 35661 (Category 1)
35621, 35665, 35666 (Category 1)
35641, 35646, 35651 and 35671 (Category 1)
35701, 35721, 35741 and 35761 (Category 1)
35800 and 35840 (Category 1)
36420 and 36425 (Category 1)
36488 and 36490 (Category 1)
36825 and 36830 (Category 1)

Hemic and Lymphatic Systems

38520, 38525 and 38530 (Category 1)

Digestive System

40804 and 40805 (Category 4)
40810 and 40812 (Category 2, Category 4)
40814 and 40816 (Category 2, Category 4)
41826 and 41827 (Category 4)
42300 and 42305 (Category 4)
43450 and 43451 (Category 1)
43500 and 43510 (Category 1)
43630 and 43635 (Category 1)
44140 and 44141 (Category 1)
44143 and 44144 (Category 1)
44388 and 44389 (Category 1)
45302 and 45303 (Category 1)
45307 and 45310 (Category 1)
45379 and 45380 (Category 1)
45382 and 45383 (Category 1)
46257 and 46258 (Category 1)
46255, 46257, 46258 and 46260, 46261, 46262 (Category 4)
46280 (Category 4)
47350 and 47360 (Category 4)
47554 and 47555 (Category 1)
47721 and 47740 (Category 1)
49520 and 49525 (Category 1)
49530 and 49535 (Category 1)
49570 and 49575 (Category 4)

Urinary System

50234 and 50236 (Category 1)
50610, 50620 and 50680 (Category 1)
50951 and 50953 (Category 1)
51550 and 51555 (Category 1)
51705 and 51710 (Category 4)
51725 and 51726 (Category 4)
51736 and 51741 (Category 4)
51860 and 51865 (Category 4)
52270 and 52275 (Category 1)
52310 and 52315 (Category 4)
52317 and 52318 (Category 4)
52320 and 52325 (Category 1)
53660 and 53661 (Category 1)
53670 and 53675 (Category 4)
54000 and 54001 (Category 1)
55840, 55842 and 55845 (Category 1)
56500 and 56515 (Category 4)
57061 and 57065 (Category 4)
57555 and 57556 (Category 1)
58260 and 58265 (Category 1)
58267 and 58270 (Category 1)
58275 and 58280 (Category 1)

Endocrine System

60500 and 60505 (Category 1)

Nervous System

61304 and 61305 (Category 1)
61510, 61512, 61514 and 61516 (Category 1)
61518, 61519 and 61520 (Category 1)
61700 and 61702 (Category 1)
61790 and 61791 (Category 1)
62220 and 62223 (Category 1)
62288 and 62289 (Category 1)
63001, 63005 and 63010 (Category 1)
63015 and 63016 (Category 1)
63020 and 63030 (Category 1)
63040 and 63042 (Category 1)
64702 and 64704 (Category 1)
64719 and 64721 (Category 1)

Eye and Ocular Adnexa

65101 and 65103 (Category 1)
65210 and 65220 (Category 1)
65710, 65720 and 65725 (Category 1)
65730, 65740 and 65750 (Category 1)
65865 and 65875 (Category 1)
66150, 66155 and 66160 (Category 1)
66600 and 66635 (Category 1)
66625 and 66630 (Category 1)
66700 and 66701 (Category 1)
66720 and 66721 (Category 1)
66800 and 66801 (Category 1)
66920 and 66930 (Category 1)
67005 and 67010 (Category 1)
67141 and 67145 (Category 1)
67208 and 67218 (Category 1)
67311, 67312 and 67313 (Category 1)
67400 and 67412 (Category 1)
67500 and 67505 (Category 1)
67801 and 67805 (Category 1)
67901 and 67902 (Category 1)
67903 and 67904 (Category 1)

Auditory System

69000 and 69005 (Category 4)
69220 and 69221 (Category 1)
69505 and 69511 (Category 1)
69632 and 69633 (Category 1)
69635 and 69636 (Category 1)
69641, 69642, 69643 and 69645 (Category 1)
69660 and 69661 (Category 1)

DS07 **** HCFA: DIVISION OF DATA DEVELOPMENT; BMAD ****

PREPARED 11/22/88 1987 LOCAL CODE USAGE

** GROUP TITLE **	NUMBER OF RECORDS IN GROUPS	PERCENT OF # OF RECS TO TOT REC	ACCUMULATED FREQUENCY	PERCENT OF ACCUM FREQ TO TOT FREQ	ACCUMULATED ALLOWED CHGS	PERCENT OF ALLWD CHGS TO TOT AC
NATIONAL	195,862	2.48%	34,874,149	3.78%	885,428,871	3.06%
REGIONAL USAGES						
BOSTON	10,744	3.23%	1,706,709	3.84%	34,387,092	2.31%
NEW YORK	22,297	4.17%	7,934,634	8.55%	253,000,166	6.93%
PHILADELPHIA	24,290	4.08%	4,201,711	4.81%	135,018,763	4.12%
ATLANTA	20,619	2.07%	4,421,055	1.57%	88,367,435	1.60%
CHICAGO	36,748	2.77%	7,095,426	4.92%	152,119,014	3.23%
DALLAS	20,277	2.65%	3,606,948	4.80%	72,424,679	2.61%
KANSAS CITY	8,141	1.82%	1,421,631	3.72%	13,911,583	1.20%
DENVER	4,379	1.72%	519,216	2.93%	12,038,834	2.22%
SAN FRANSICO	19,954	1.33%	2,487,681	2.56%	82,011,185	1.92%
SEATTLE	7,257	2.57%	1,097,503	4.51%	26,385,597	3.32%
RR TRAVELERS	21,156	2.50%	381,635	2.01%	15,764,523	2.21%

** GROUP TITLE **	NUMBER OF RECORDS IN GROUPS	PERCENT OF # OF RECS TO TOT REC	ACCUMULATED FREQUENCY	PERCENT OF ACCUM FREQ TO TOT FREQ	ACCUMULATED ALLOWED CHGS	PERCENT OF ALLWD CHGS TO TOT AC
CARRIER USAGES						
MASSACHUSETTS BLUE	3,121	3.01%	821,705	3.62%	18,290,432	2.44%
NEW HAMPSHIRE/VERMO	1,276	2.37%	174,949	4.19%	1,538,660	1.30%
MAINE, BLUE SHIELD	1,600	2.66%	125,148	3.50%	2,410,291	2.16%
ARKANSAS BLUE SHIEL	460	1.09%	226,208	2.76%	3,405,585	1.26%
LOUISIANA, ARKANSAS	1,504	1.01%	269,424	2.43%	5,939,875	1.38%
CALIFORNIA BLUE SHI	9,185	1.39%	874,848	2.62%	30,356,821	2.02%
FLORIDA BLUE SHIELD	7,350	2.23%	1,978,415	2.79%	40,044,974	1.62%
ILLINOIS BLUE SHIEL	18,314	5.05%	2,444,386	7.49%	40,267,336	3.52%
INDIANA BLUE SHIELD	2,249	1.85%	464,943	3.29%	10,355,898	2.03%
IOWA BLUE SHIELD	3,431	2.71%	750,703	9.05%	7,650,289	3.16%
NEBRASKA, IOWA BLUE	1,384	2.23%	246,644	6.01%	1,195,804	0.91%
MICHIGAN BLUE SHIEL	6,012	2.87%	1,005,502	2.79%	41,035,915	3.69%
MONTANA BLUE SHIELD	363	0.94%	29,090	1.40%	1,582,272	2.30%
WEST NEW YORK BS	5,827	3.53%	664,667	4.13%	13,106,214	2.29%
RHODE ISLAND BLUE S	218	0.91%	30,553	0.90%	2,432,926	2.05%
TEXAS BLUE SHIELD	14,606	3.36%	2,485,664	5.63%	50,917,155	3.05%
WASHINGTON PHYSICIA	1,968	1.74%	487,642	3.51%	15,331,926	3.27%
WISCONSIN PHYSICIAN	4,016	1.97%	330,959	2.25%	9,594,879	2.15%
PUERTO RICO MEDICAR	444	1.91%	145,749	3.07%	4,226,709	2.46%
ARIZONA, AETNA LIFE	924	0.72%	70,135	0.66%	2,426,267	0.55%

** GROUP TITLE **	NUMBER OF RECORDS IN GROUPS	PERCENT OF # OF RECS TO TOT REC	ACCUMULATED FREQUENCY	PERCENT OF ACCUM FREQ TO TOT FREQ	ACCUMULATED ALLOWED CHGS	PERCENT OF ALLWD CHGS TO TOT AC
CARRIER USAGES						
NEVADA, AETNA LIFE	239	0.52%	32,687	1.31%	737,228	0.59%
NEW MEXICO, AETNA L	546	1.56%	71,117	2.65%	1,328,388	1.26%
OKLAHOMA, AETNA LIF	3,161	3.05%	554,535	6.13%	10,833,676	3.59%
CALIFORNIA, OCCIDEN	9,489	1.47%	1,501,931	3.09%	48,337,240	2.28%
RAILROAD BOARD	21,156	2.50%	381,635	2.01%	15,764,523	2.21%
CONNECTICUT, TRAVEL	4,529	4.99%	554,354	5.21%	9,714,783	2.50%
MINNESOTA, TRAVELER	909	3.20%	1,799,126	32.38%	38,201,364	23.34%
VIRGINIA, TRAVELERS	3,513	4.27%	595,496	5.13%	18,237,779	4.72%
GEORGIA, PRUDENTIAL	1,093	0.71%	77,729	0.49%	1,716,014	0.30%
OHIO, NATIONWIDE IN	3,883	1.10%	694,607	1.86%	10,412,013	0.83%
MISSISSIPPI, TRAVEL	2,455	6.12%	547,750	7.46%	8,669,214	3.88%
NORTH CAROLINA, PRU	1,270	1.22%	289,324	1.32%	6,224,458	1.04%
NEW YORK, GROUP HEA	1,179	4.62%	566,749	11.72%	28,088,551	14.29%
TENNESSEE, EQUITABL	2,117	2.75%	735,614	4.53%	9,022,559	1.82%
NEW JERSEY, PRUDENT	2,468	1.71%	1,695,159	5.78%	34,504,773	3.42%
COLORADO BLUE SHIEL	2,520	3.04%	237,434	3.28%	5,060,392	2.35%
MARYLAND BLUE SHIEL	1,313	1.78%	114,618	1.34%	3,989,610	1.11%
OREGON, AETNA LIFE	4,289	3.63%	572,171	7.09%	10,076,915	4.08%
IDAHO, EQUITABLE IN	609	1.58%	23,620	1.16%	526,454	0.81%
ALABAMA BLUE SHIELD	3,286	2.26%	358,337	2.83%	9,157,437	2.05%

** GROUP TITLE **	NUMBER OF RECORDS IN GROUPS	PERCENT OF # OF RECS TO TOT REC	ACCUMULATED FREQUENCY	PERCENT OF ACCUM FREQ TO TOT FREQ	ACCUMULATED ALLOWED CHGS	PERCENT OF ALLWD CHGS TO TOT AC
CARRIER USAGES						
DELAWARE, PENNSYLVA	1,461	5.39%	154,102	3.96%	3,189,092	3.42%
D.C., PENNSYLVANIA	2,793	4.43%	527,102	6.03%	15,931,858	4.69%
KANSAS BLUE SHIELD	577	0.61%	38,598	0.67%	1,115,715	0.73%
KENTUCKY BLUE SHIEL	2,463	2.52%	264,642	2.26%	10,917,230	3.10%
MINNESOTA BLUE SHIE	1,365	2.83%	355,903	8.84%	2,251,609	2.73%
NEW YORK, EMPIRE BL	12,379	7.00%	4,862,310	12.85%	173,073,919	10.17%
NORTH DAKOTA BLUE S	653	0.96%	147,901	3.04%	1,055,614	0.73%
PENNSYLVANIA BLUE S	14,262	5.36%	2,747,411	5.57%	92,308,349	4.83%
SOUTH CAROLINA BLUE	585	1.17%	169,244	0.14%	2,615,549	0.73%
UTAH BLUE SHIELD	645	1.31%	98,520	3.40%	4,227,802	4.42%
ALASKA, AETNA LIFE	391	3.16%	14,070	4.39%	450,302	3.18%
HAWAII, AETNA LIFE	117	0.52%	8,080	0.40%	153,629	0.21%
WYOMING, EQUITABLE	198	1.26%	6,271	0.99%	112,264	0.59%
MISSOURI, GENERAL A	2,043	2.40%	334,880	2.47%	2,943,883	0.71%
WEST VIRGINIA, NATI	948	1.13%	62,982	1.19%	1,362,075	0.72%
MISSOURI, BLUE SHIE	706	0.89%	50,806	0.78%	1,005,892	0.45%

THE ABOVE INFORMATION WAS CALCULATED AGAINST THE FOLLOWING POPULATION TOTALS:

TOTAL RECORDS READ	TOTAL FREQUENCY	TOTAL ALLOWED CHARGES
7,887,619	921,761,436	28,890,216,871

*** END OF REPORT ***

CMS LIBRARY
3 8095 00012312 1

U.S. Department of
Health and Human Services
Health Care Financing Administration
1E9 Oak Meadows Building
6325 Security Boulevard
Baltimore, Md. 21207